

THE IRON AGE

A Review of the Hardware, Iron and Machinery.

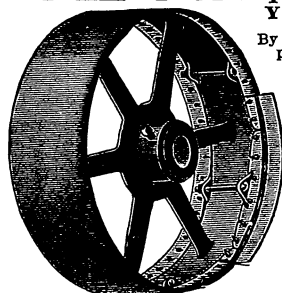
Published every Thursday Morning by David Williams, Nos. 96, 98, 100 & 102 Reade St., New York.

Vol. LIV: No. 9. New York, Thursday, August 30, 1894.

\$4.50 a Year, including Postage.
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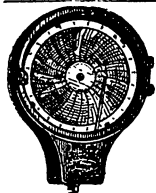
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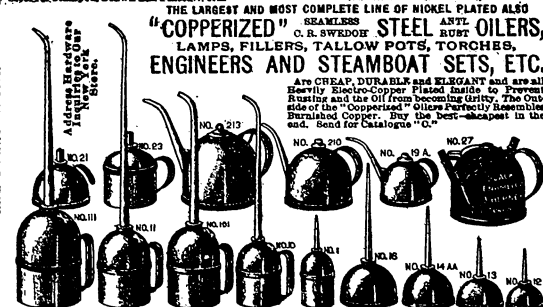
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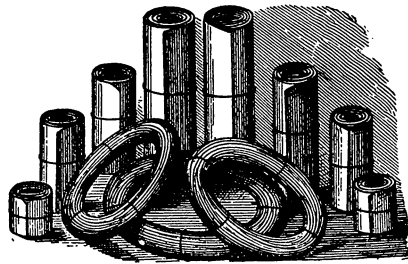
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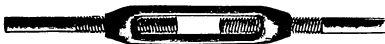
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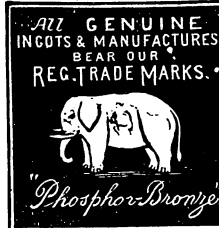
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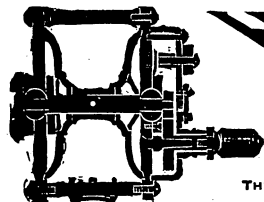
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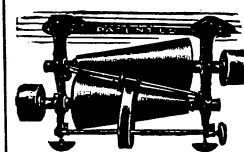
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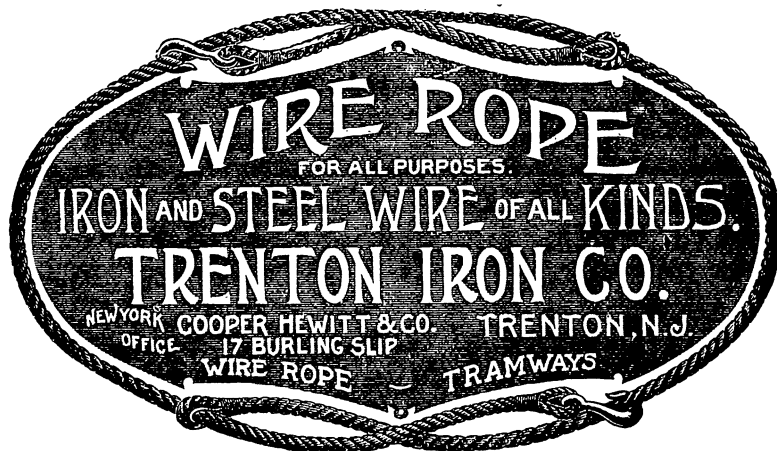
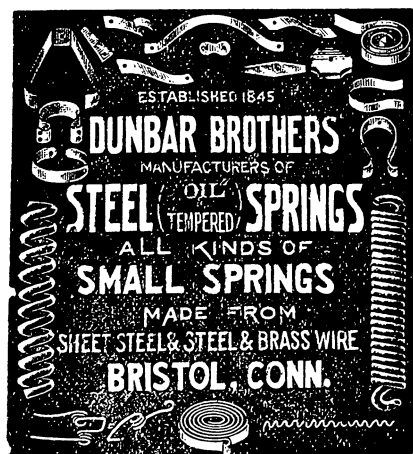
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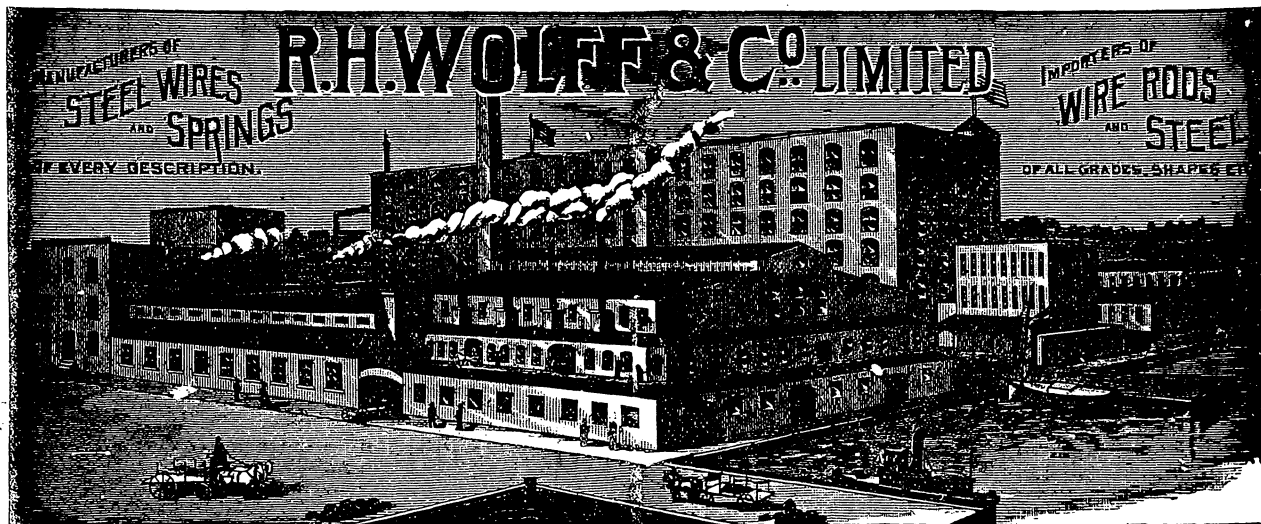
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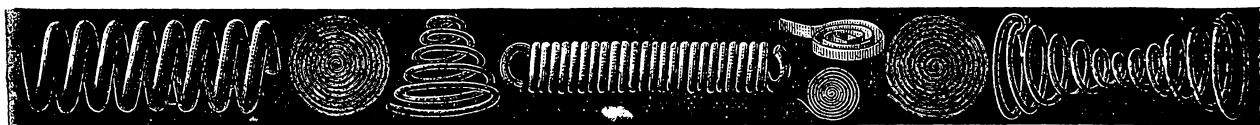
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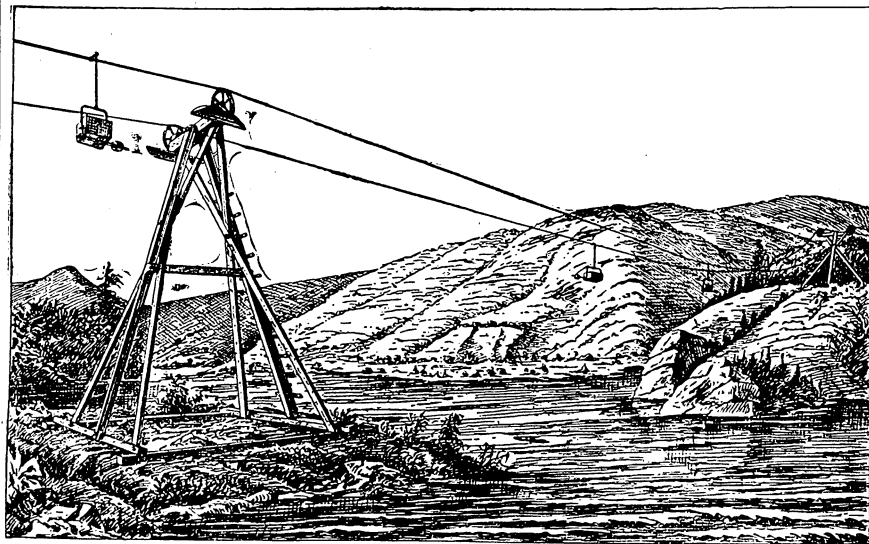
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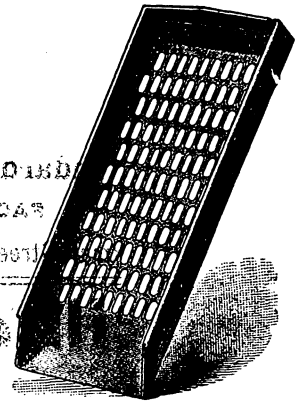
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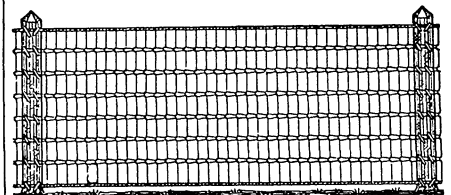
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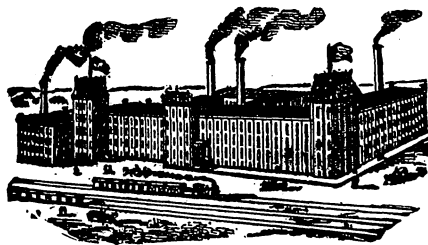
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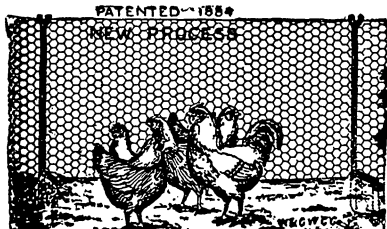
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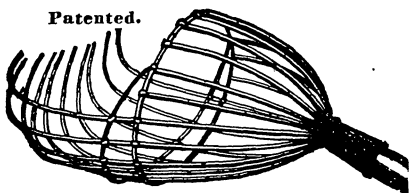
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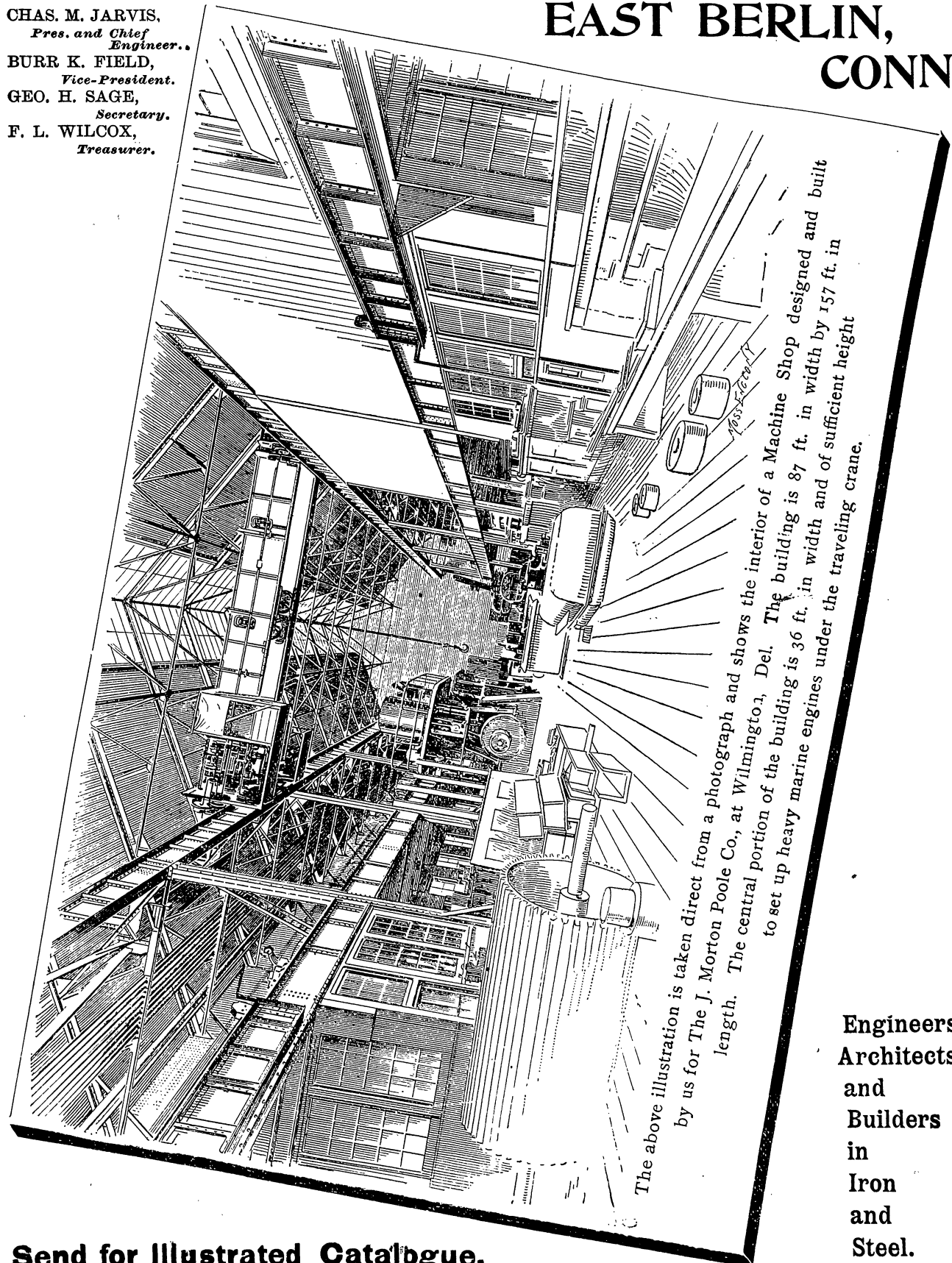
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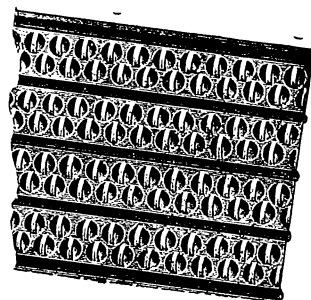
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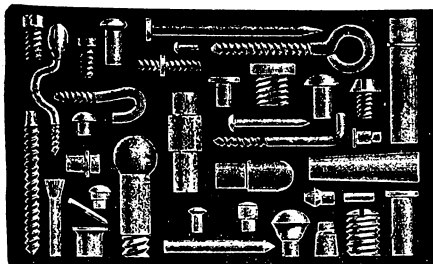
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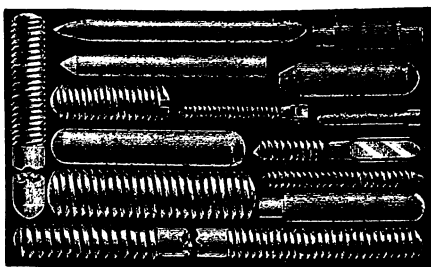
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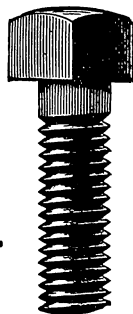
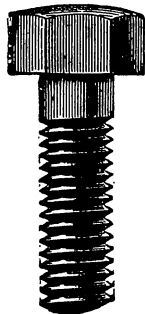
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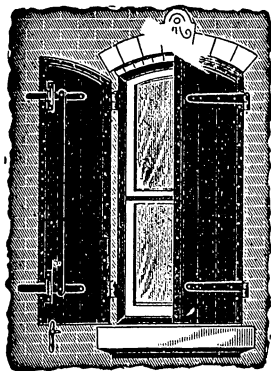
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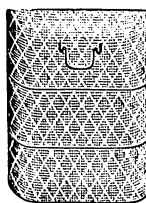
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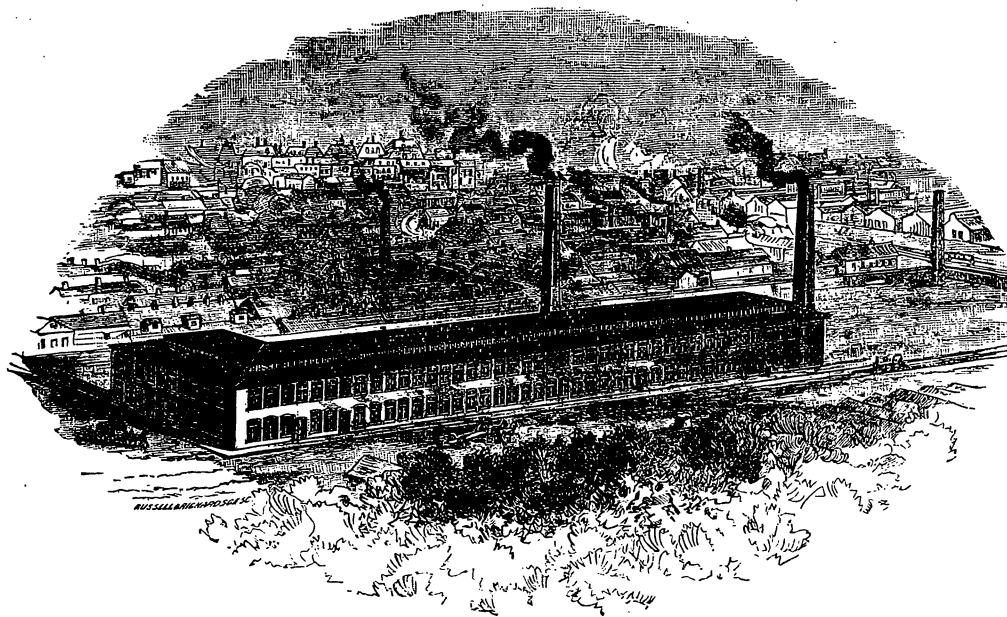
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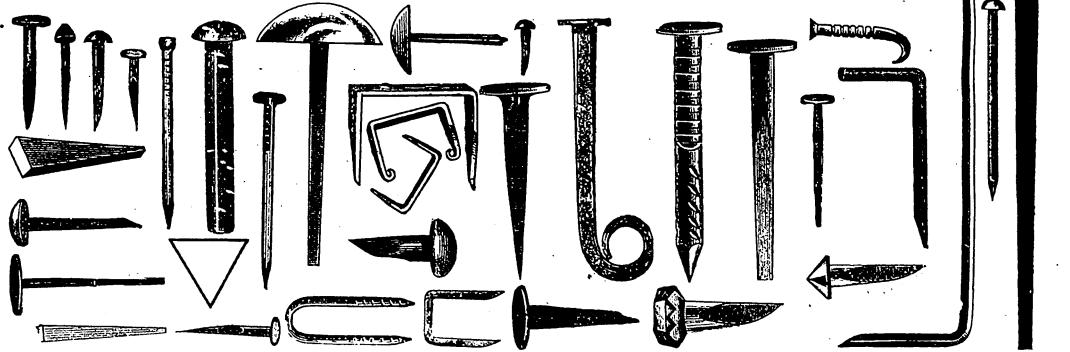
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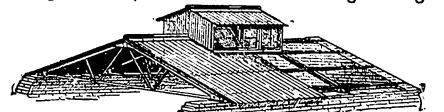
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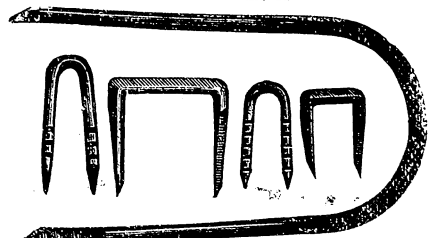


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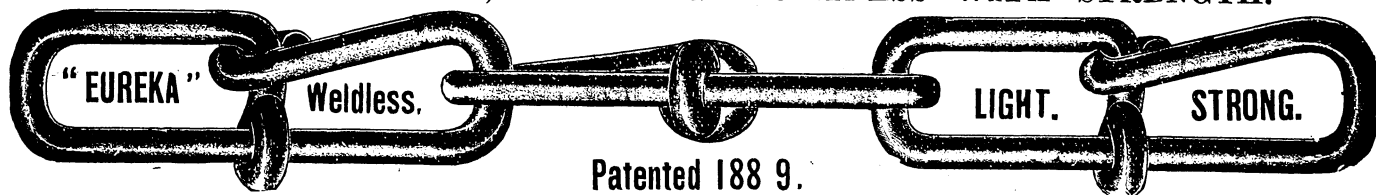
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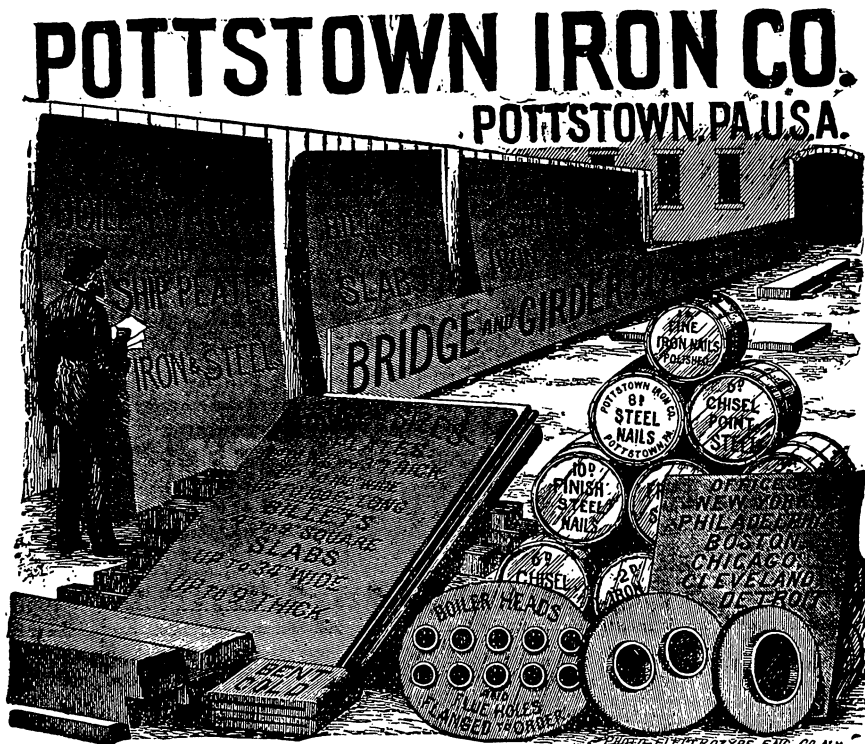


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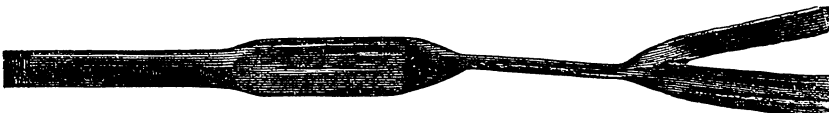
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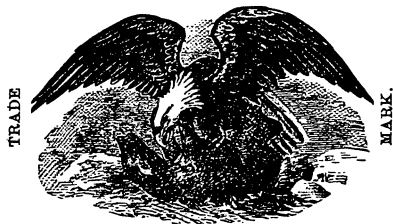
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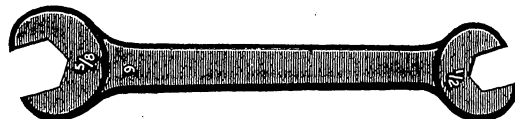
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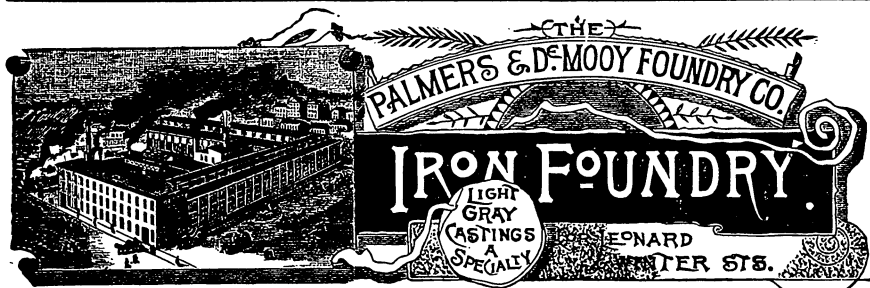
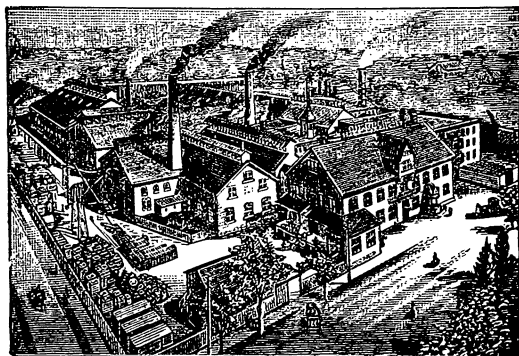
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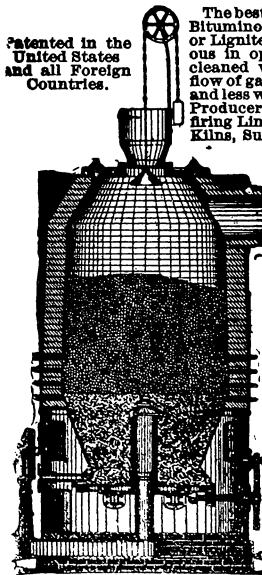
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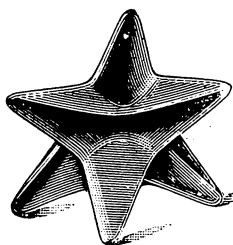
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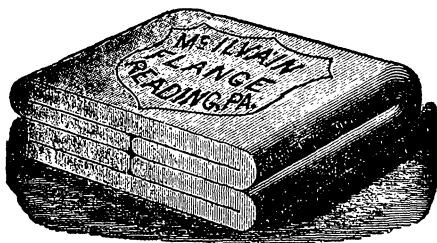
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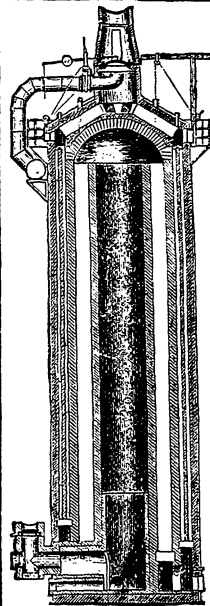
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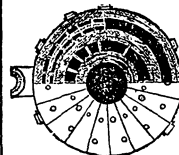
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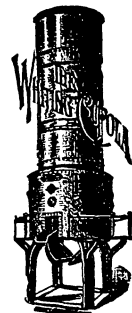
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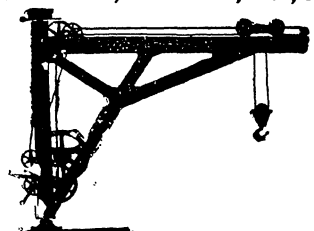
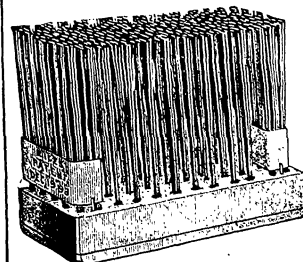
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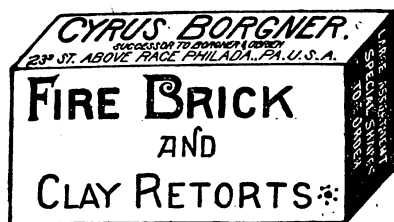
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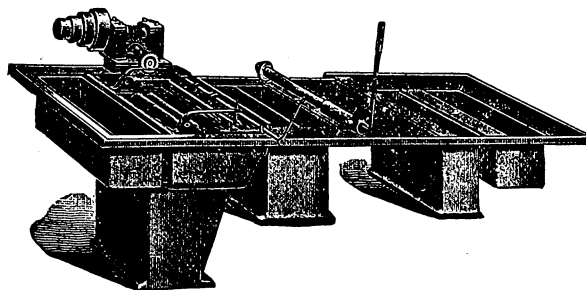
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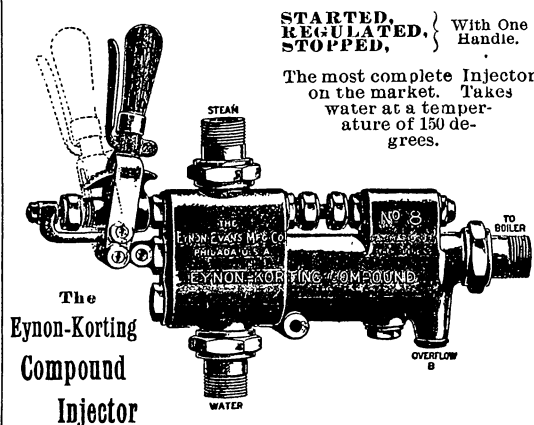
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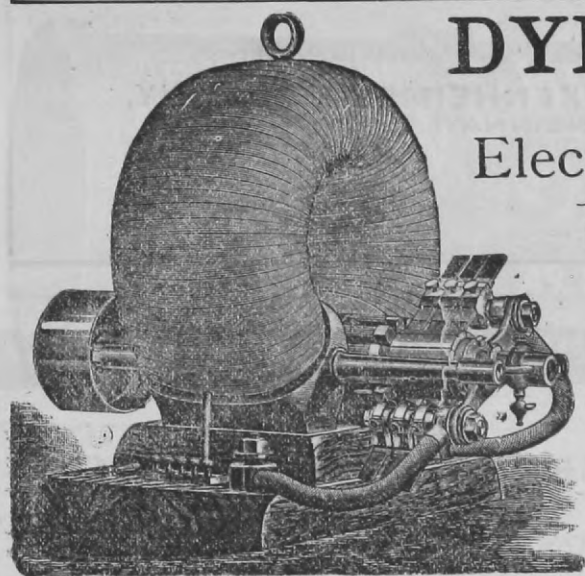
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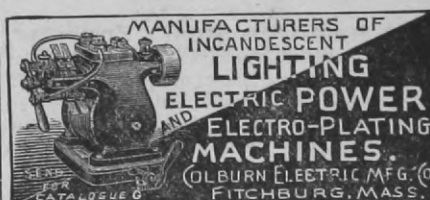
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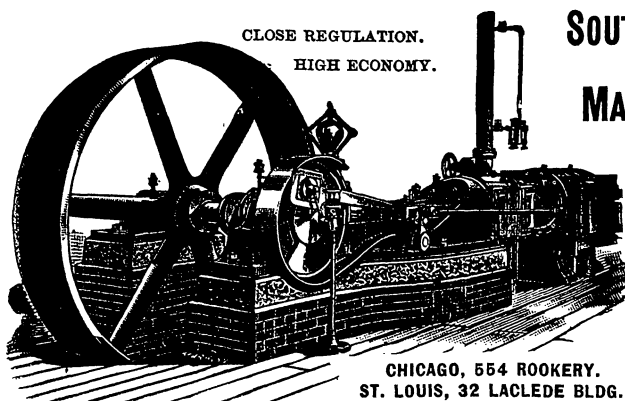
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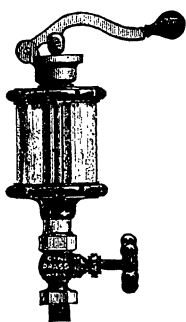
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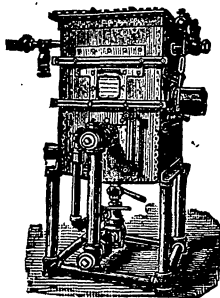
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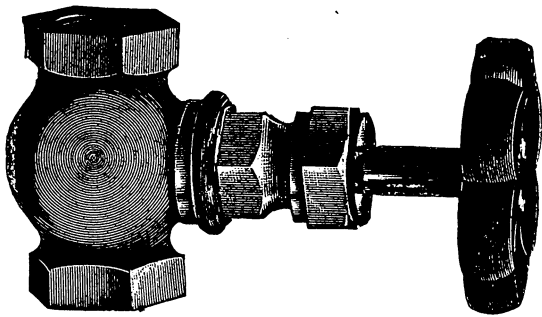
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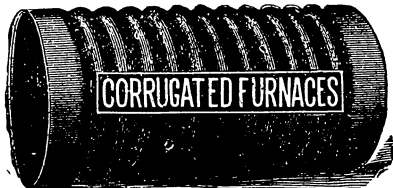
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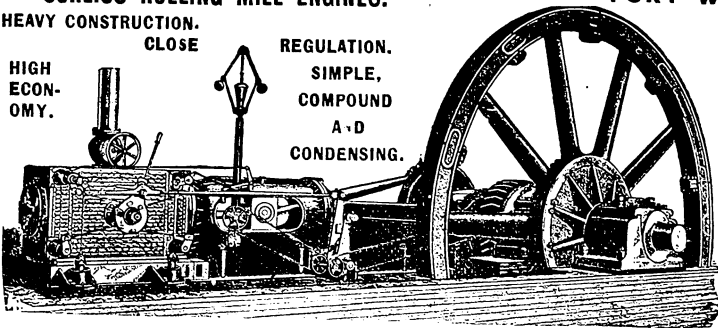
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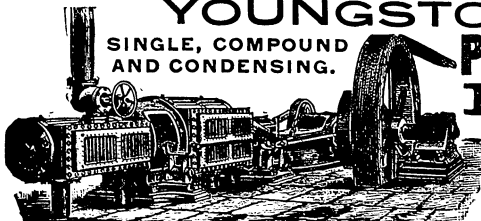
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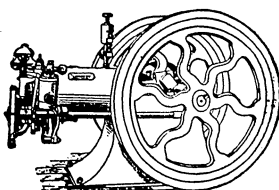
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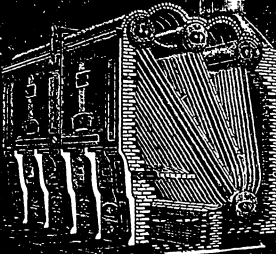
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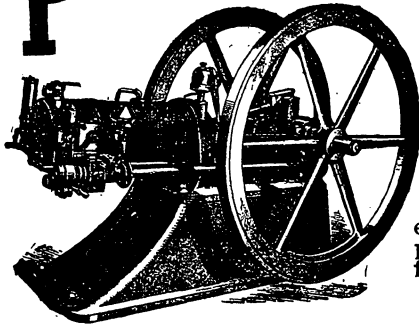
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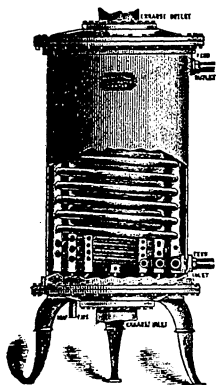
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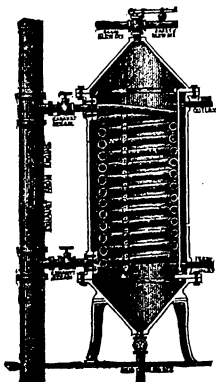
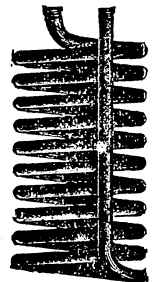


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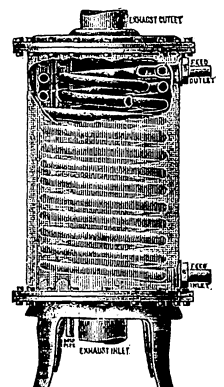
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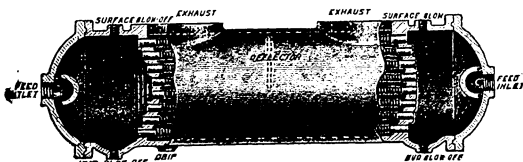
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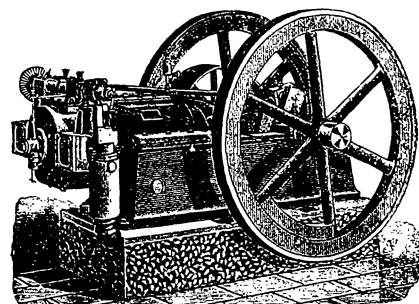
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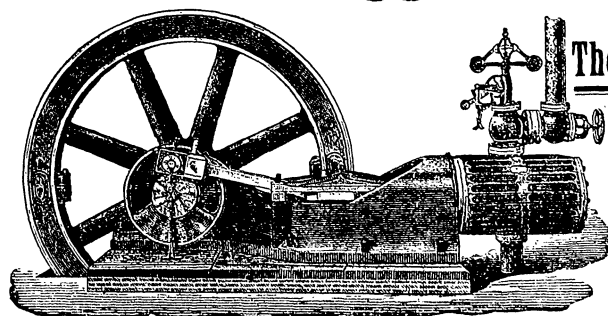
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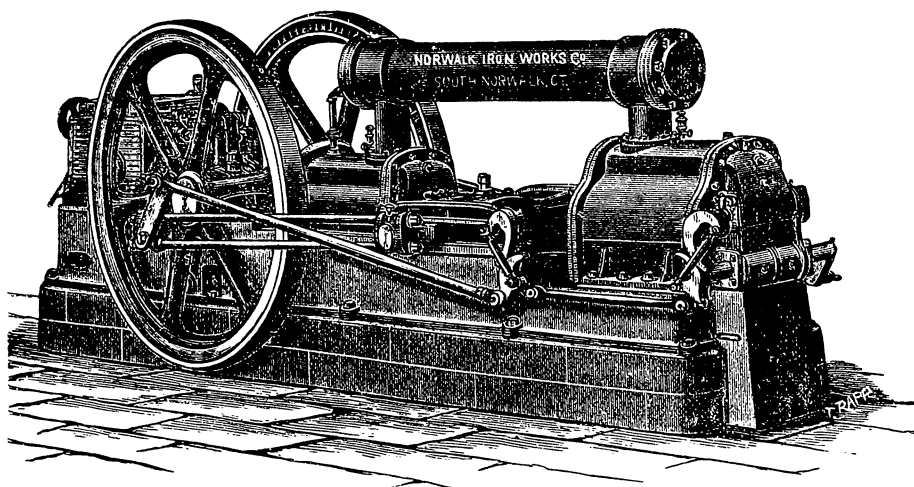


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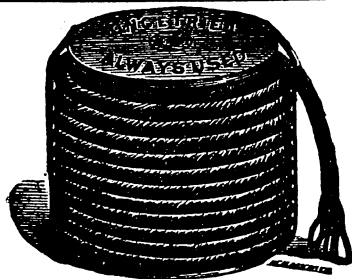
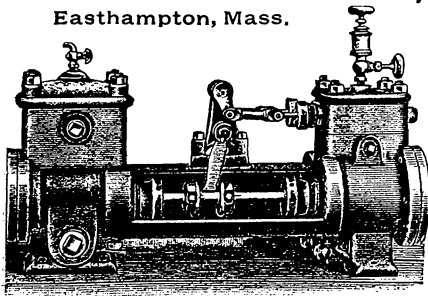


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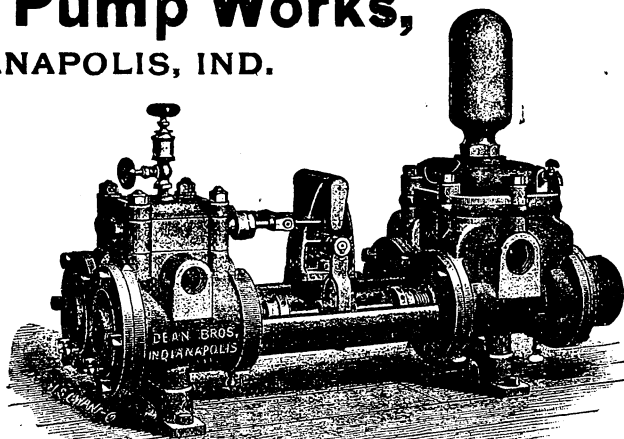
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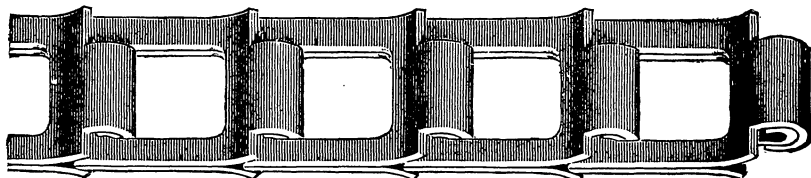
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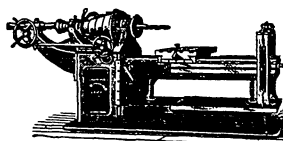
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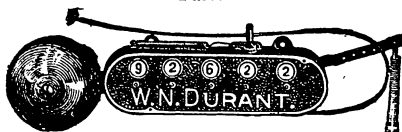
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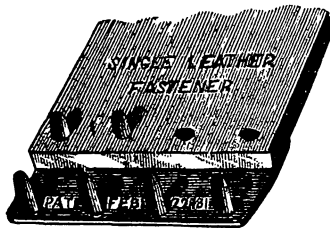
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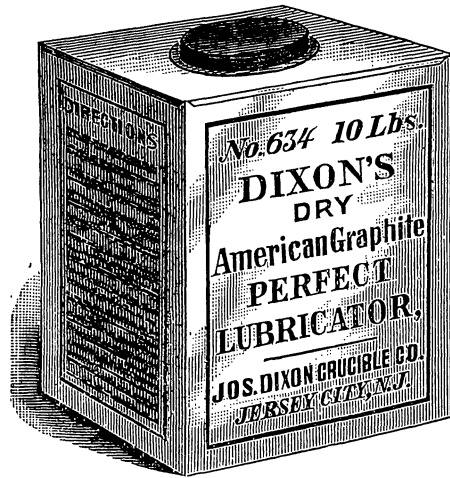
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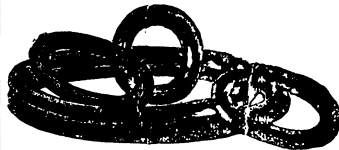
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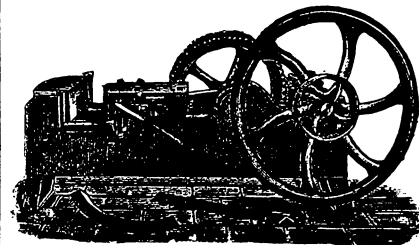
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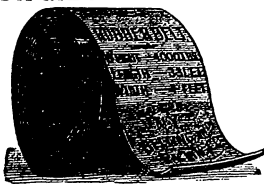


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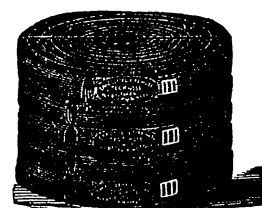


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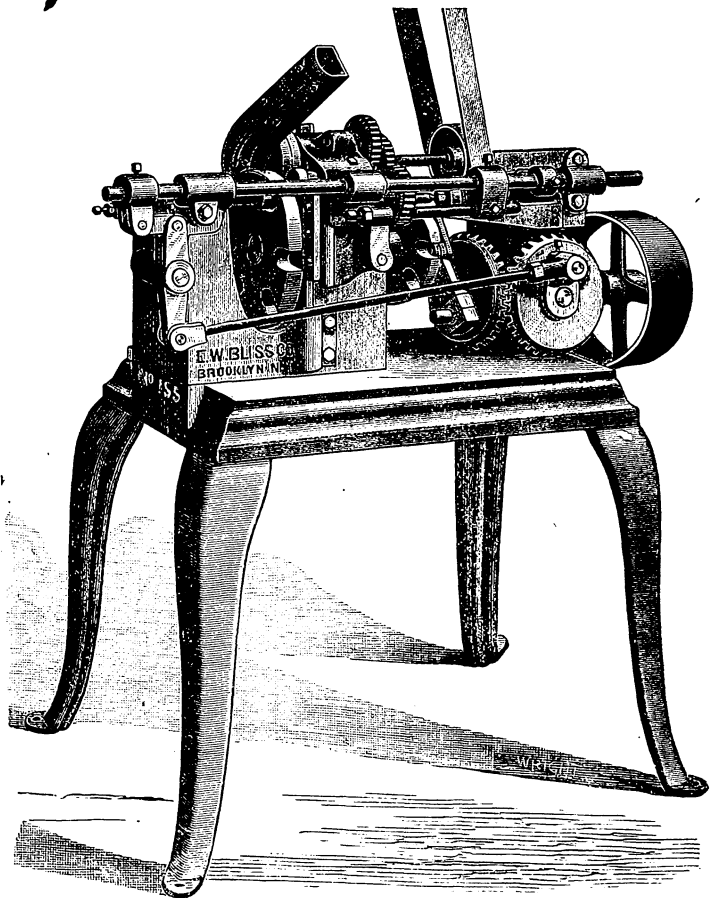
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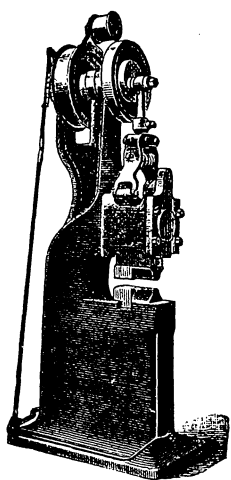
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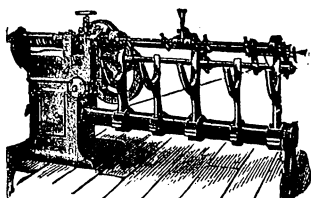
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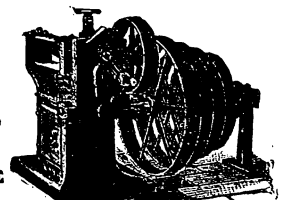
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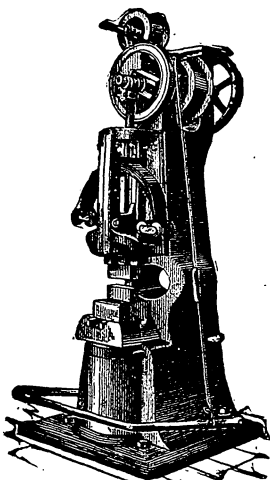
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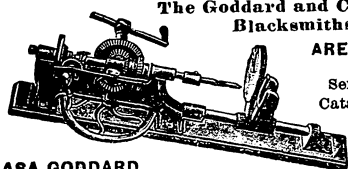
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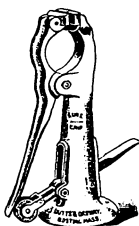
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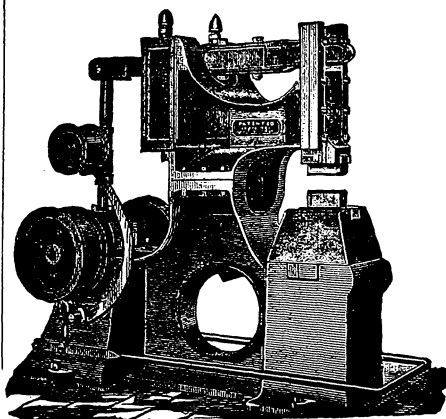
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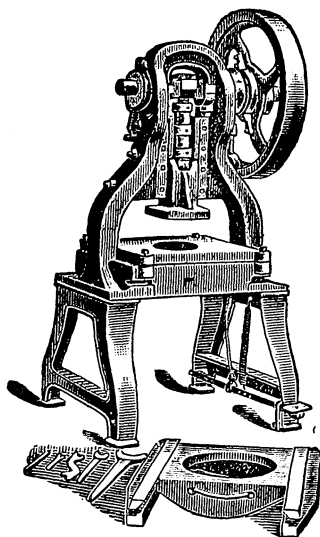
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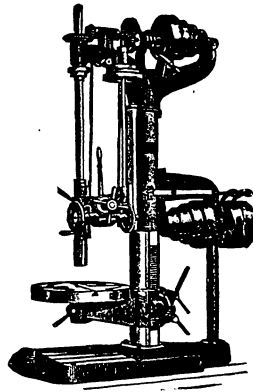
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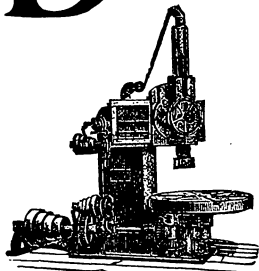
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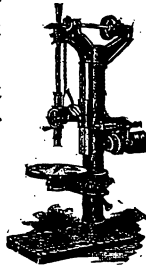
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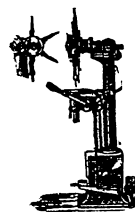
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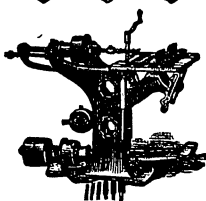
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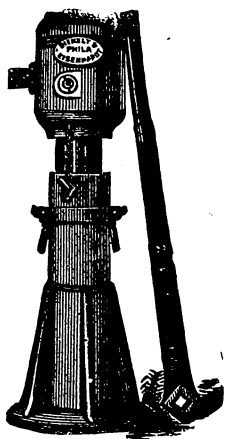
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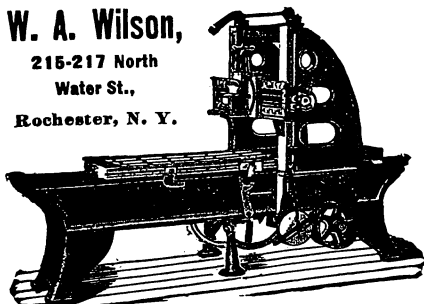
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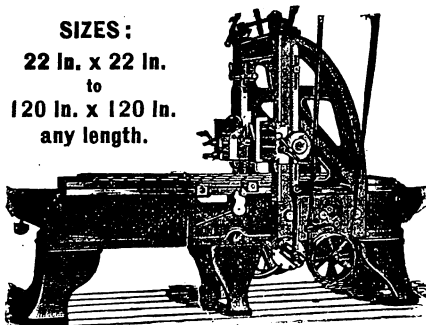


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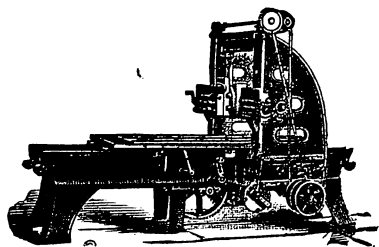
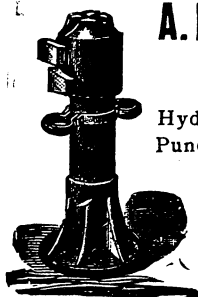
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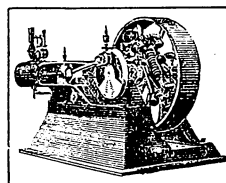
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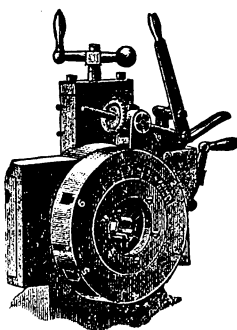
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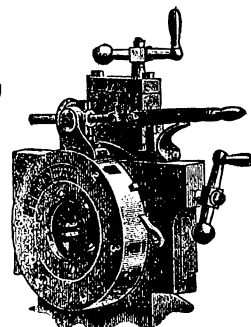
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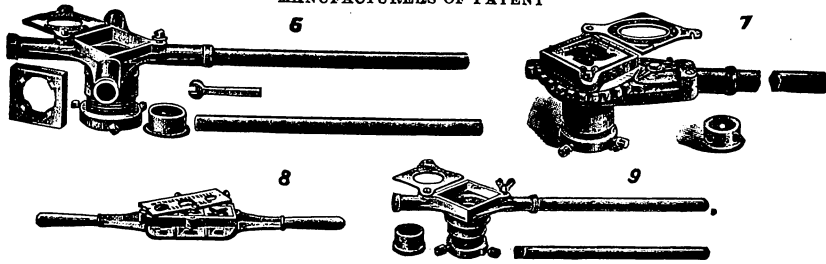
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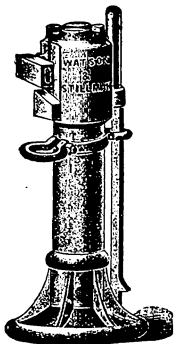
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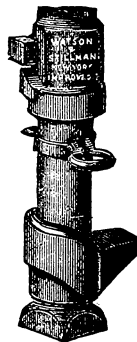
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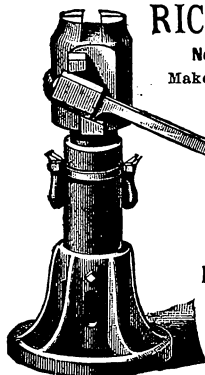
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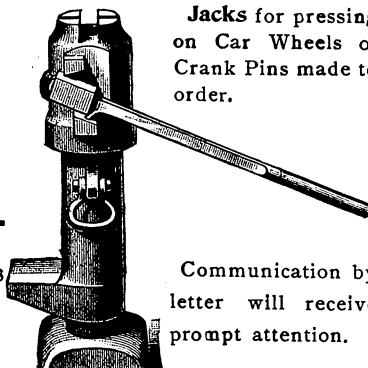
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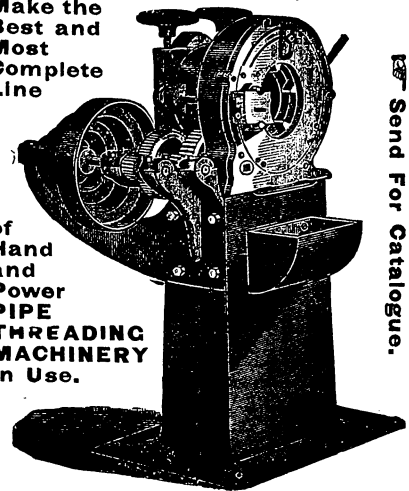
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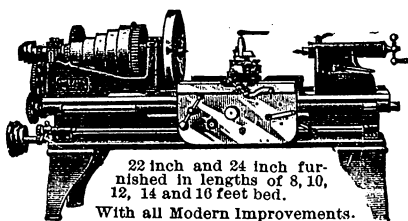
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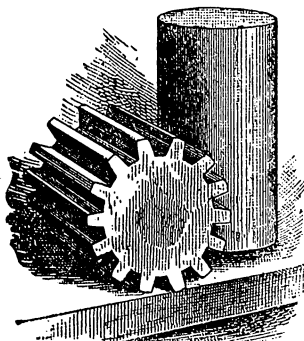
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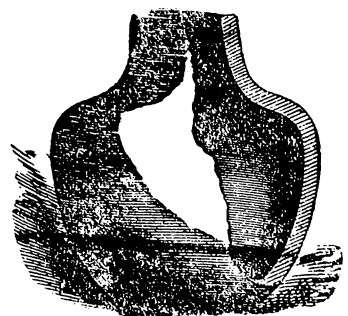
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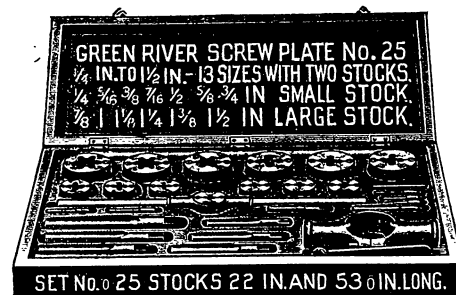
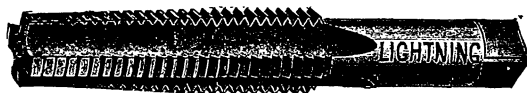
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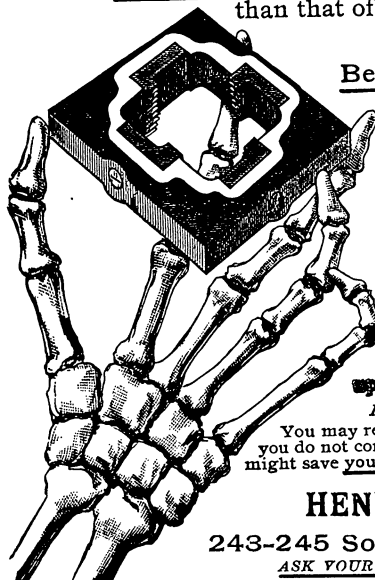
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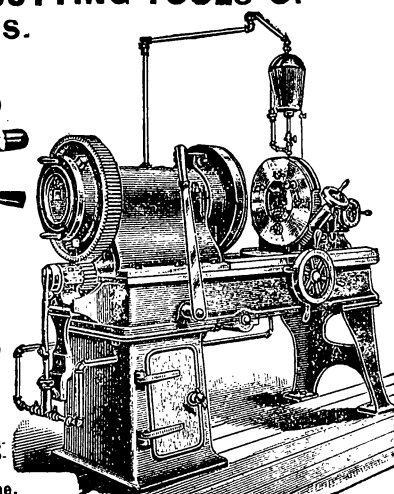
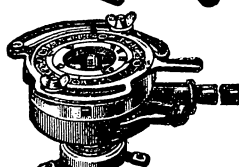
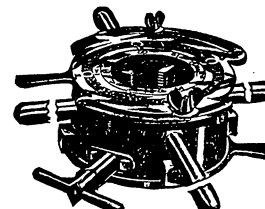
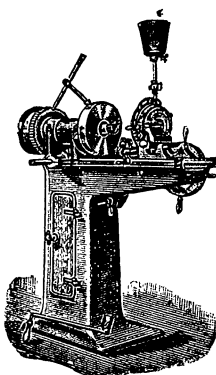
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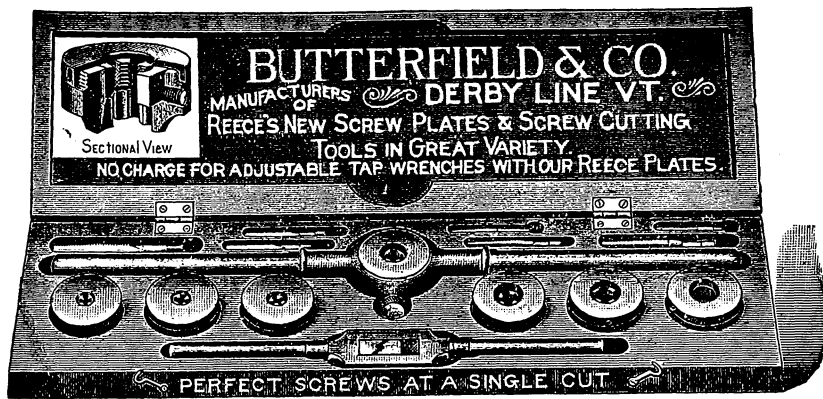
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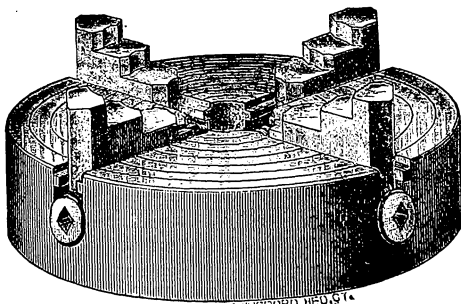
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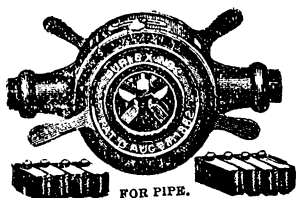
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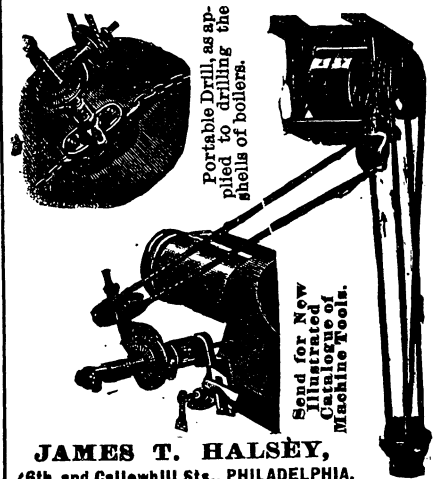
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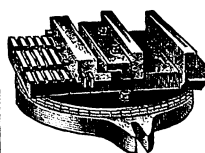
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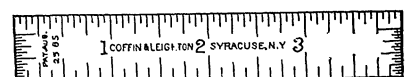


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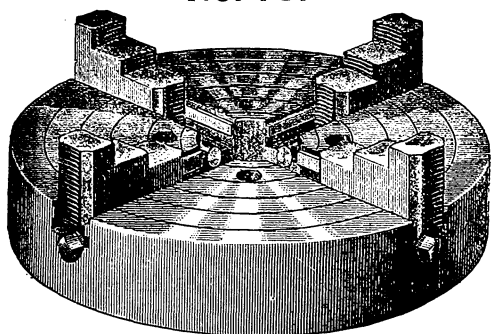
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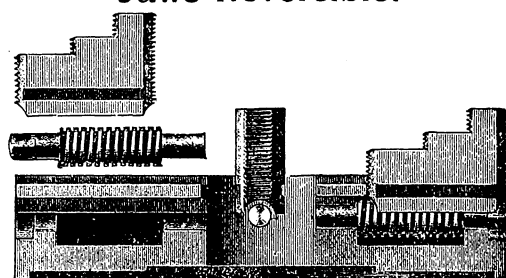
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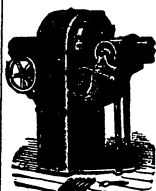


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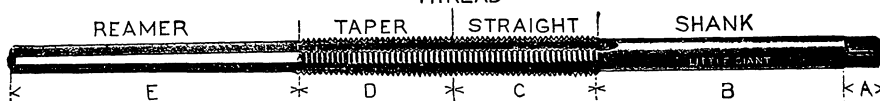
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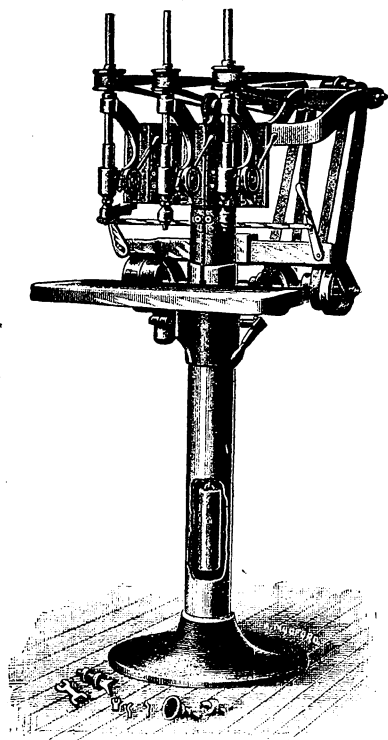


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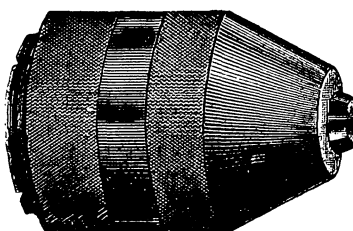
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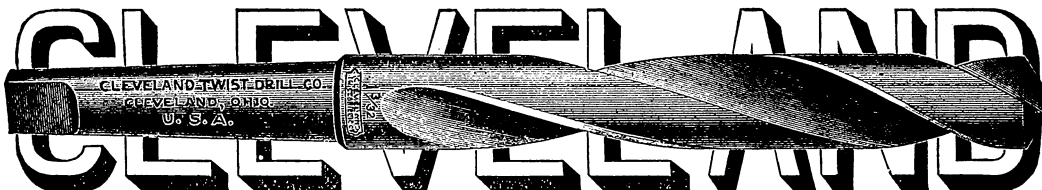
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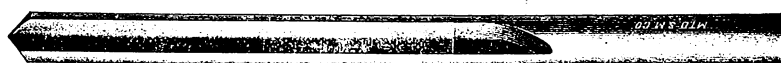
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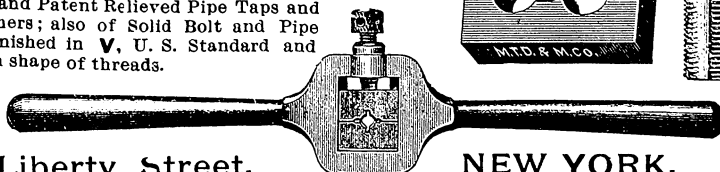
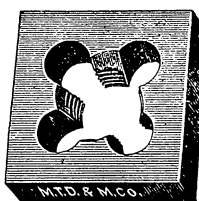
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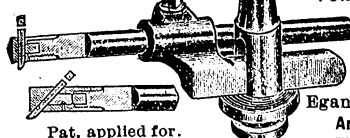
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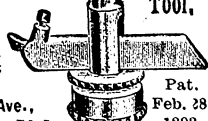
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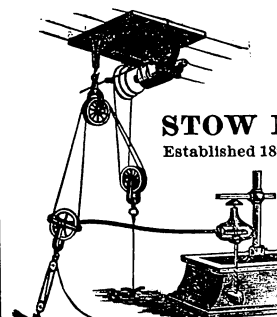
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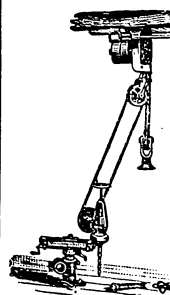
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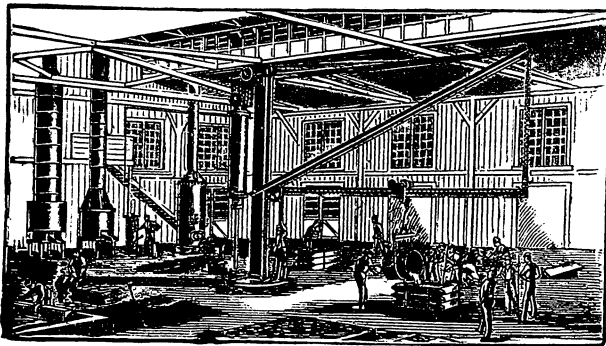


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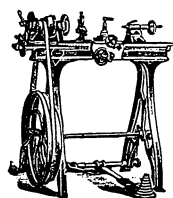


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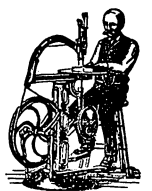
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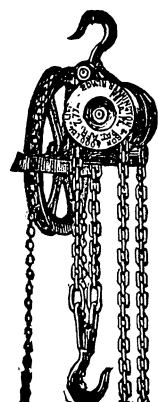


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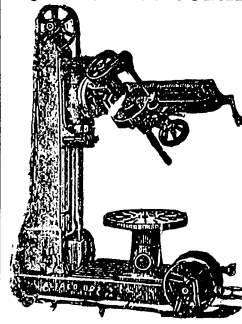
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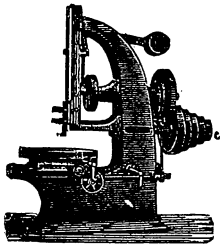
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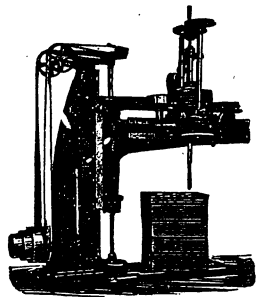
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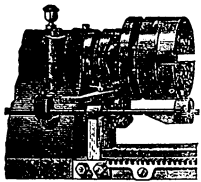
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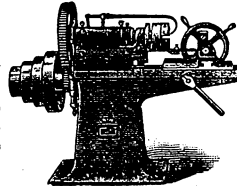
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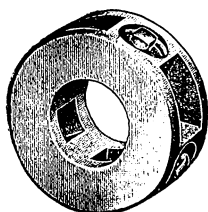
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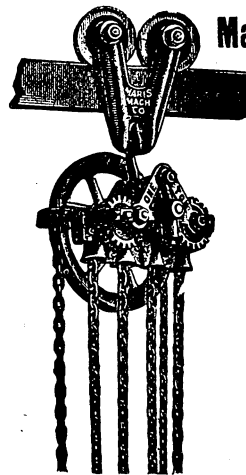
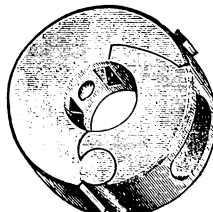


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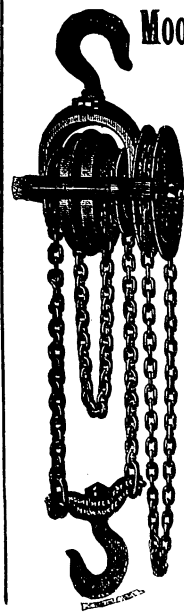


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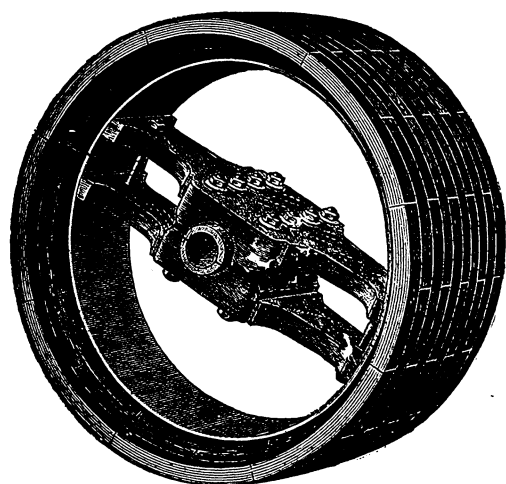
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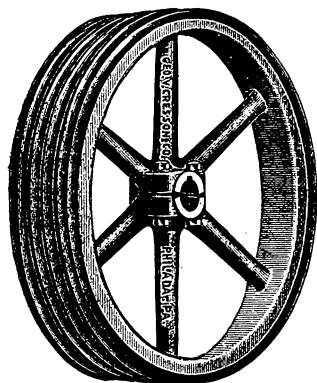
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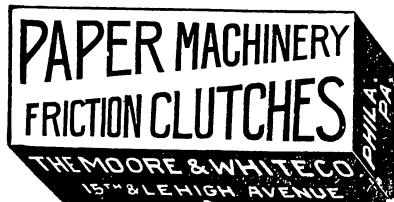
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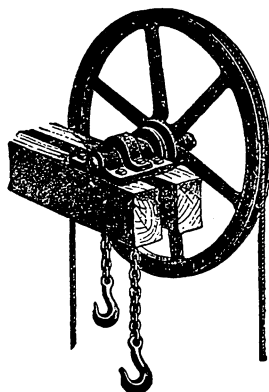
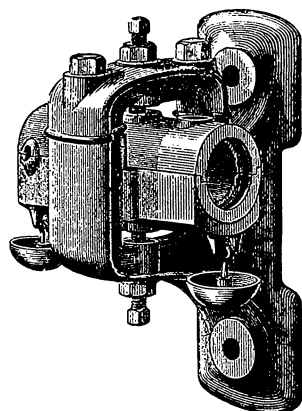
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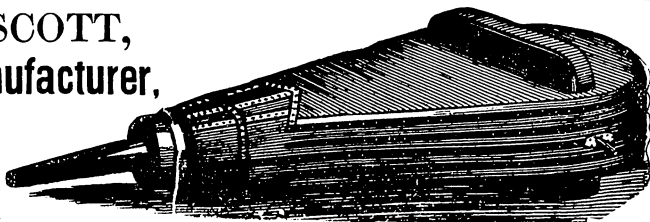
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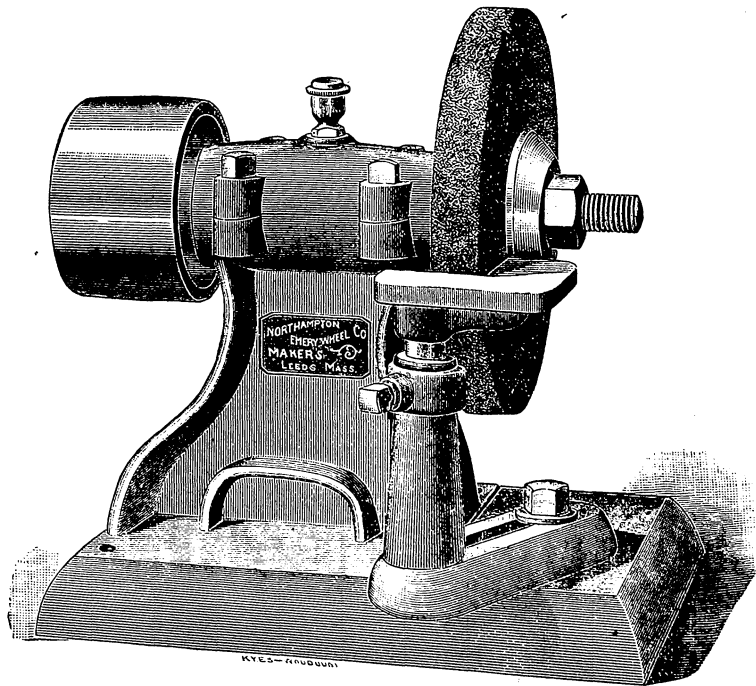
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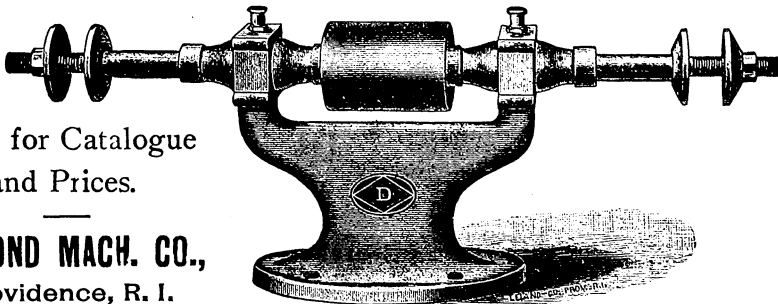
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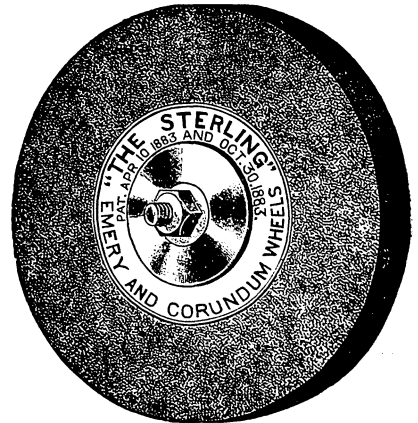
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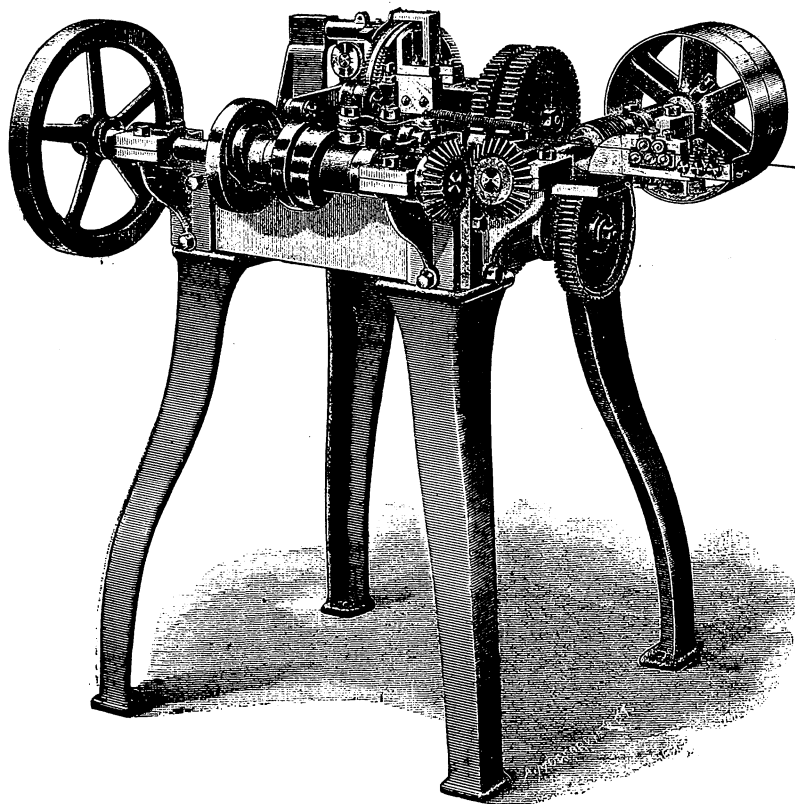
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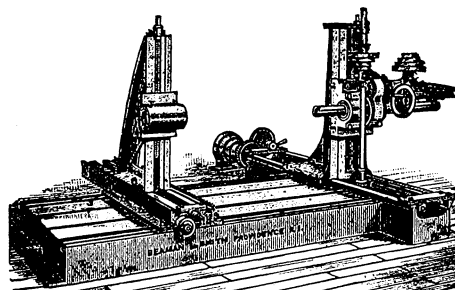
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- Lathe, 52 in. swing, 40 ft. long, triple geared.
 - New Steam Engines, 16 x 24, 14 x 24, 12 x 24, 6 x 12.
 - Rebuilt Engines, 14 x 24, one pair 4 x 8.
 - Five hundred iron pulleys 10 ft. dia. and less.
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To furnish reasonable estimates on specialties in light metal work.
CLARK & COWLES, Plainville, Conn.
Manufacturers of Clock Trimmings, Rivets, Springs &c.

60-lb. Steel Rails.

55 Tons 60-lb. Steel Rails.

In good order for re-
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City delivery.

Price very low for quick sale.

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FOR SALE. SECOND-HAND ENGINES.

36 x 48 Corliss.	18 x 48 Corliss.
28 x 60 "	18 x 36 "
26 x 60 "	16 x 32 Fitchburg.
20 x 48 "	12 x 36 Corliss.
22 x 42 Wright.	10 x 24 "

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ICE MACHINES

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2 LINDE MACHINES,

Capacity, 15 tons ice each and double that capacity as refrigerators.

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DOUBLE CORLISS CONDENSING ENGINE, 600 H. P., One 15 inch by 42 inch Corliss Engine, 125 H. P. Double Automatic Engine, 350 H. P. two 100 H. P. Phoenix Automatic Compound Engines, 45 and 5 H. P., Westinghouse Engine, one 80 H. P. Beck Engine, one 7 x 7 Southwark Automatic Engine, one 4 H. P. Otto Gas Engine, 100, 200, 300 and 500 H. P. Feed Water Heaters, 30 to 100 H. P. Return Tubulars, 70 H. P. Locomotives, 60 H. P. Vertical Boilers, good for 100 pounds.

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BUILDERS' USE

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Second-hand Steel and Iron T Rails of all sizes. Sound and selected and cut to specified lengths promptly for builders' use, vaults, kilns, foundations &c. at low prices and quick delivery. All sizes of selected relaying T and Girder rails ready for shipment at bottom figures. Apply

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- 1 Hendey Shaper, 16 in. stroke, imp. vise.
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 - 44 in. C. & D. Resaw. Fine condition.
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 - Safety Construction Company's combined Trap and Pump.
- And other machinery, new and second hand. Write for prices. **Machinery Supply Company, 89, 41 and 43 Central Ave., Rochester, N. Y.**

A LARGE ADDITION TO OUR STOCK OF CORLISS ENGINES.

Also HIGH SPEED, Etc.

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Corliss—26 x 43, 23 x 36, 30 x 72, 10 x 20. Several large sizes guaranteed, viz.: 18 x 48, 23 x 48, 28 x 43, 30 x 48, 26 x 60. Many other sizes on hand. Porter-Allen 11 x 16 and other High Speeds. An assortment of Horizontal Tubular Boilers, Large Duplex Fire Pump, Brennan Crusher, Platform Scales, Burr Mill, Bogardus Mill, etc., etc.

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- 16 in. x 8 ft. Fitchburg.
- 16 in. x 6 ft. Perkins.
- 16 in. x 7 ft. Bement.
- 16 in. x 6 ft. F. E. Reed.
- 18 in. x 6 ft. New Haven.
- 18 in. x 8 ft. Pease.
- 18 in. x 8 ft. Blaisdel.
- 18 in. x 10 ft. Blaisdel.
- 20 in. x 6 ft. Bullard.
- 24 in. x 12 ft. Field.
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- 37 in. x 14 ft. Old Style.

- 10 in. Slate, 1-Spindle.
- 10 1/2 3-Spindle Slate.
- No. 1 2-Spindle Garvin.
- No. 2 3-Spindle Garvin.
- No. 3 4-Spindle Garvin.
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- 20 in. Blaisdel.
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- 5 ft. Niles Radial.
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Also a large number of other machines. Write for complete list and detailed description.

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Also 61 North 7th St., Philadelphia, Pa.

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- BAKER BLOWERS, Nos. 3, 4, 5, 5 1/2, 7 and 7 1/2.**
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- CAMERON VACUUM PUMP, 16 in. x 20 in. x 24 in.**
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- 1 No. 9 CLAYTON DUPLEX AIR COMPRESSOR, 22 in. x 24 in. x 30 in.**
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- Locomotive Boilers, 20, 40 and 100 H. P.

Machinery Buyers write to
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SECOND-HAND.

- ENGINES, Horizontal and Vertical. All types and sizes up to 2000 H. P.**
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- MILLS, 3 high, 12 in., 20 in., 22 in., 30 in. and 36 in. 1 Reversing 32 in. Blooming Mill complete.**
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- SHEARS for Bars, Rails, Blooms and Plates.**
- SQUEEZERS, ROLL LATHES, CRANES, GRINDING PANS, MACHINE SHOP TOOLS, &c.**
- LOCOMOTIVES. Fine condition, various sizes and gauges.**

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The Star and Crescent Furnace, capacity 50 tons per day, with all the Buildings, Ore Lands, Tramways and Equipments. The whole of it new and in good running order. Plenty of ore, cheap charcoal, plenty of labor and plenty of water. Pig iron can be made cheaper than in any other part of the Union. This furnace is located on a railroad line and is situated in Cherokee County, Texas, near New Birmingham. **LEON F. HAUBTMAN, Room 9, Godchaux Building, New Orleans, La.**

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200 Tons 60-lb. Steel RELAY RAILS

with splices. Also wanted second-hand equipment and scrap. Will purchase or handle on commission, as desired, cash advances made on consignments.

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- 10 in., 11 in. and 13 in. Swing. 4 and 5 ft. Bed Lathes, Reed, Prentice and L. & M.
15 in., 18 in., 19 in., 20 in. and 22 in. Swing, 6 and 8 ft. Bed Lathes, Dustin, Pond, Young, Fifield and Bullard.
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- 1 17 in. x 17 in. x 30 in. Hand Planer.
1 16 in. x 16 in. x 3 ft. Crank Planer.
1 17 in. x 17 in. x 3 ft. L. & M. Planer.
1 20 in. x 20 in. x 4 ft. L. & M. Planer.
1 24 in. x 24 in. x 6 ft. Pease Planer.
1 27 in. x 27 in. x 5 ft. White Planer.
1 60 in. x 60 in. x 22 ft. Heavy Planer with 4 heads.
1 60 in. x 60 in. x 22 ft. Hepworth, 1 head.
1 8 ft. Boring and Turning Mill with pulley attachment.

DRILL PRESSES.

- 2 20 in. Drill Presses, Prentice & Davis.
1 20 in. x 36 in. Gap Lathe.
3 Slate Drills, 1 one-spindle, 2 two-spindle.
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1 50 in. Heavy Geared Post Drill.
1 each No. 2, 3 and 4 Garvin Gang Drills.

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10 in., 12 in. and 14 in. Swing, 3, 4 and 5 ft. Beds, Garvin and Spencer.

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RAILS FOR SALE.**NEW AND SECOND-HAND**

Relaying rails of all sections. Second-hand Cut Rails for Builders' Use. Also a small second-hand Engine and Boiler for sale.

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Planers, Drills and Lathes, good as new, for cash.

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Two 200 lb., one 80 lb. and one 40 lb. Bradley Cushioned Helve Hammers in first-class running order, also one Oil Pump in good condition. Apply

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FOR SALE.

A 32 in. x 48 in. Vertical Engine, with 25 ton flywheel, 20 ft. diameter.

One pair 20 in. Pinion Housings.

Three sets 3 high 20 in. Roll Housings.

In complete working order. Address

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FOR SPECIAL BARGAINS

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BIG BARGAINS.**Second-hand Machinery For Car Shops.**

- 1 36 in. 150 ton Hydraulic Wheel Press.
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1 J. A. Fay & Co. No. 2 1/4 Pacific Planer and Matcher.
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Write for full list of new and second-hand Wood and Iron Working Machinery.

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Write us for Bargains.

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- Nos. 1, 2, 5 and 6 Roots Blowers.
9 in. x 9 in. Fitchburg Vertical Engine.
54 in. x 9 ft. Vertical Boiler.
H. P. Baxter Engine and Boiler.
1 24 in. x 25 ft. bed Engine Lathe.
1 1/4 to 1 1/2 in. open die Bolt Cutter.
Low prices.

COOKE & CO.,
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For Sale, Very Low for Cash.

1000 tons relaying 60-lb. Steel T Rails, 500 tons relaying Stee. Street Rails, side bearing, 35 to 47 lbs. sections. Also 3 tanks 7 1/2 ft. diameter, 10 ft. high.

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CHEAP HOISTING MACHINERY.

Double Cylinder Engine,
26 x 43 in. reversing gear, circular slide valves, balanced throttle valve; direct acting drum 6 ft. 6 in. wide, 7 ft. diameter; heavy fly wheel, complete and nearly new, and a most substantial outfit.

Double Cylinder Engine,
8 x 16 inches, reversing gear, geared winding drum 6 ft. x 6 ft.

Steam Piping,
complete. (About 176 ft.).

Large Knowles Feed Pump,
Copper air chamber. Excellent condition.

S Hydraulic Automatic Jacks.
A number of good PULLEYS and SHEAVES, WIRE ROPE, &c., ready for use. Wooden and Iron Tanks, Iron Hoisting Buckets, &c.

Three Smoke Stacks,
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Boilers,
1 54 in. diam., about 16 ft. long, 16 in. flues.
4 Cylinder type, 36 in. diam., about 30 ft. long.
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Grate Bars, Doors, Frames, &c.,
complete and in good order.

One Feed Water Heater
and connections, suitable for above outfit, will be sold together or separately. For further information apply to

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A lot of Rolling Mill Machinery, Engines, 30-inch Plate Trains, Shears, Testing Machines, Cranes, Pumps, Electric Light Machines, Sturtevant Blower, etc., etc. Full particulars by applying to

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MECHANIC'S LIENS EXCLUSIVELY



We can save you money on new or second-hand tools. Get our prices before buying.

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We have a set of Brass or German Silver Rolls, 18 x 24, made by Farrell Foundry Co. in perfect order, which we have no use for and will sell at a low figure. Address

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I DESIRE TO DRAW
the attention of capital to a copper-silver mine and to a group of copper-silver mining claims, close to Butte, Montana, which is the greatest copper producing section of the world. The mine has a great deal of ore in sight and could, it is believed, be made immensely profitable were a concentrator erected on it. The terms upon which investors can secure some of these properties are believed to be wonderfully reasonable. JOHN C HENDERSON, 213 North Idaho St., Butte, Montana.

WANTED.

A second-hand Steam Hammer, modern design and good condition, 3 1/2 to 5 tons drop. Also a strongly geared, heavily built lathe, 36 in to 54 in. swing by 35 ft. bed. Give full particulars.

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A new iron building for immediate shipment, 81 ft. wide, 200 ft. long, consisting of a main span 61 ft. wide, with lean-to on one side 20 ft. wide. The trusses are sufficiently strong to carry a line of shafting and light jib crane. This building is suitable for a Machine Shop, Tin Plate Mill, Rolling Mill, etc. For further information address

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Located in Chicago, within easy teaming distance of city warehouses and large consumers. Railroad facilities, first-class, connecting with every road entering the city. Well equipped, having one 10 in. and one 18 in. three-high train and an 18 in. muck train. Capacity, 75 tons a day. Mill can easily be adapted to specialties. Owners will take part pay in product. Address

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Machines for making double pointed tacks. Address, giving number, description and cash price,

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WANTED.

Corliss Engines, single or double. Steam cylinder 26, 28 or 30 inch x 80 inch stroke. Address, with full particulars and price, P. O. BOX 954, Pittsburgh, Pa.

WANTED.

At once, about two miles more or less sixteen pound T rail. Apply to

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FOR SALE.

A lot of plate iron about 1/4 in. thick, 4 ft. 8 in. long, 3 ft. 8 in. wide, good for floor plates. Address "FLUOR PLATES," office of *The Iron Age*, 220 So. 4th St., Philadelphia.

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Factory, 40 x 140, two stories, 3/4 acre lot, two side tracks, 50 H. P. engine and boiler. Suitable for bolt, hardware manufactory or foundry, \$600 per year for five year lease. Bolt machinery.

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A fine business opportunity for a live business man or two partners who have \$25,000 to invest in a first-class, old, well established and well located jobbing and retail hardware business, which did not lose money last year. Stock is well assorted. Good location in large Eastern City. Reasonable lease of premises can be continued. This will bear full investigation. Parties who can command above amount of capital address

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with best social connections and references, some capital and fifteen years' experience in iron commission, desires to form a new connection in same general line. Full particulars strictly confidential. Address

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Planing Mill and Woodworking Plant doing a good business. On time, or will exchange for desirable real estate or stocks of merchandise. Plant in a beautiful town on the Lake Shore & Michigan Southern and N.Y.C. and St. L. Railroads, about 2 1/2 miles from shore of Lake Erie. Address COLUMBIAN NOVELTY CO., North East, Pa.

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MANUFACTURED BY

THE JOHN F. BYERS MACHINE CO.
RAVENNA, OHIO.

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At South Easton, Pa., on line of Lehigh Valley Railroad and on Lehigh Canal. Sidings in buildings. Electric light. Electric street railway. One main 2-story building, 275 ft. x 45 ft. Steam Engine, Shafting and complete appurtenances for first-class factory or machine shop. One high 1-story building, 80 ft. x 45 ft. Cement floor. One 2-story building, 35 ft. x 45 ft. ground floor suitable for smith shop, etc. These buildings were erected for galvanizing and barb wire plant, and more recently, for several years, have been in the occupancy of The National Switch & Signal Co. They form part of the plant of The Stewart Wire Co., being separated from its main plant by the Lehigh Canal. Affords a most desirable opportunity for industry using wire in any of its forms and is an exceptionally fine location for manufactory of any character.

Will be let in whole or in part, with or without the adjacent thoroughly equipped and complete Wire Drawing Mill, steam and water power, situated on same side of Canal. For further particulars address

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A manufacturer, whose line of tools is not equal to the capacity of his works, would like to add some new specialty tools to his present line. For further information address

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A well established retail Hardware business located in Brooklyn. Small competition. Well assorted stock of salable goods, consisting of general line of shelf and builders' hardware, house furnishing goods, etc. Will inventory about \$2000. Other business reason for selling. Address

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FOR SALE,

in one of the best agricultural and fruit growing sections of California, a general stock of Hardware, Agricultural Implements, Stoves, Tinware, &c. Stock will now invoice about \$30,000, but can be reduced. Best of reasons for selling. Inquire of

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Chicago Storage Warehouse.

General merchandise storage, with desk room if wanted, situate in wholesale district. Apply to

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Firms or traveling salesmen to represent makers of the best Water Tube Steam Boiler now on the market. Thorough experience and A1 references requisite. Address

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Sales held weekly for the trade. Consignments solicited. We refer to the leading manufacturers and importers.

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LATROBE STEEL WORKS, Locomotive and Car Wheel Tires. UNITED RUBBER CO., Hose, Packing, &c. GEO. GRIFFITHS CO., Shovels, Scoops, &c.

Corrugated Galvanized and Sheet Iron, Plate, Tank and Bar Iron, Waste—White, Colored and Wool.

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ATTENTION! Merchants and Manufacturers.—We collect your past due accounts. Do not let them remain too long upon your books. Send for our draft book.

THE HARDWARE BOARD OF TRADE, Ltd.
4 and 6 Warren street, New York.
JAS. H. GOLDEY, Treas.

"Expert" has been defined—by some incendiary: "One who is prepared to prove anything for a satisfactory consideration." Coincidentally, it is a significant fact that the SELF-CONFESED "ADVERTISING EXPERT" has recently become extinct, and gives promise of remaining so. The quondam "Expert," with a unanimity worthy of note, now limits his claims to simple OMNISCIENCE, or to a feigning blending of OMNISCIENCE with OMNIPOTENCE. So much for the abstruse. For obvious reasons I am not an "Expert," while a very mild type of OMNISCIENCE will instantly recognize the absurdity of any claims I might advance to such an attribute. Treating of Advertising matters, I have issued two publications—rather more perhaps than circulars, considerably less than books, neither of them works of genius, both of them obviously and avowedly FINITE. Number 2—treats of the Trade Circular; Number 9—of some phases of Newspaper and Periodical Advertising. Both will be mailed to those whose longing for light would seem to warrant the sending of five 2-cent Postage Stamps to the subscriber. Mention *THE IRON AGE*.

FRANCIS I. MAULE, 330 Chestnut Street, Philadelphia.

HELP WANTED.

*Undisplayed Advertisements for
Help Wanted not exceeding fifty
words One Dollar each insertion.
Additional words two cents each.*

WANTED.—A line of shelf hardware or carriage goods that will share with another line that does not conflict the expense of a good salesman covering all the Eastern and Central States as far as the Mississippi River. Address "SHELF OR CARRIAGE," office of *The Iron Age*, 96-102 Reade St., New York.

A SALESMAN familiar with heavy hardware and ship chandlery. A salesman acquainted with architects and builders and accustomed to handling structural material and builders' hardware. An assistant bookkeeper competent to keep set of books complete; must be a handsome writer. A shipping clerk with experience in shipping and stock work. An office boy; must be good writer, correct and quick at figures. Do not call, but apply by mail only, in own handwriting, answering following questions: date of birth; name of all former employers; time spent with each employer; date of leaving school; names of references other than former employers. HENRY B. NEWHALL, 105 Chambers St., N. Y.

A FIRST-CLASS SCRAP HEATER; steady place to a sober man; call with reference at STANDARD ROLLING MILL, 40th St., and 11th Ave., New York City.

BY A WHOLESALE Hardware house, a salesman for nearby trade; a man acquainted with the trade preferred. Address stating particulars, "READE," Box 80, office of *The Iron Age*, 96-102 Reade St., New York.

BRIGHT YOUNG MAN, good education and connections, thorough knowledge iron commission, to associate with gentleman with capital, same line. Address "D. W.," office of *The Iron Age*, 220 S. 4th St., Philadelphia.

A COMPETENT SALESMAN to represent an old established malleable iron foundry; one thoroughly acquainted with the trade; reference required. Address "MALLEABLE," No. 816, office of *The Iron Age*, 96-102 Reade St., New York.

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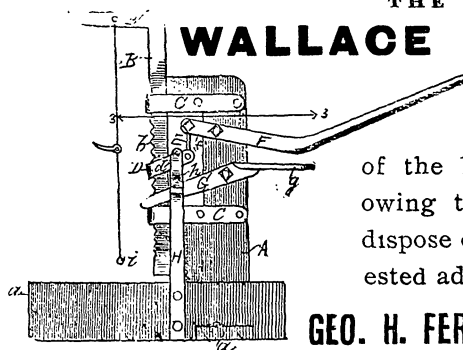
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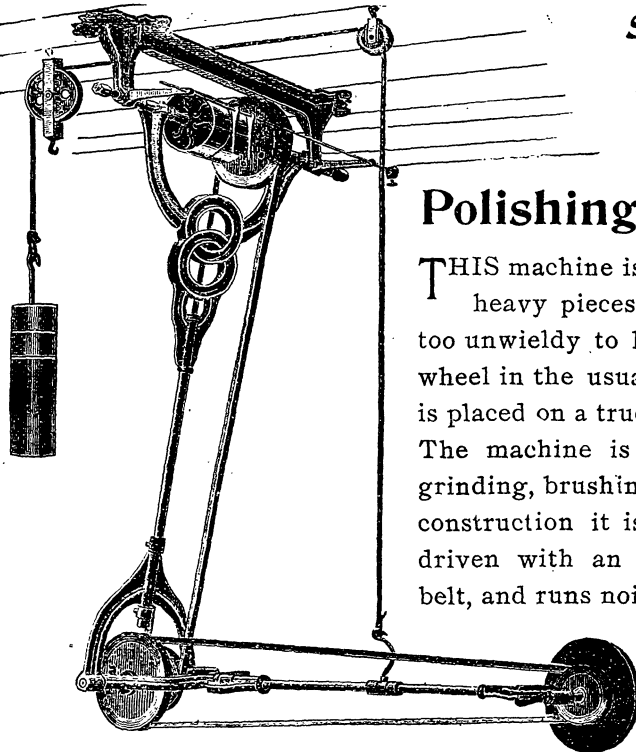
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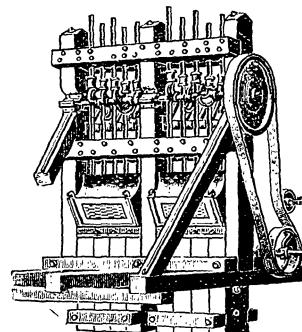
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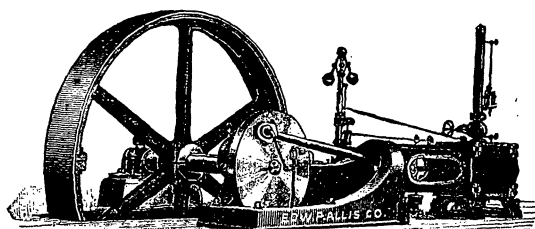
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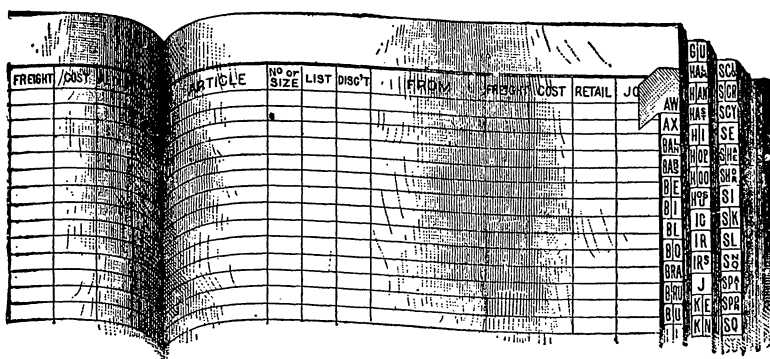
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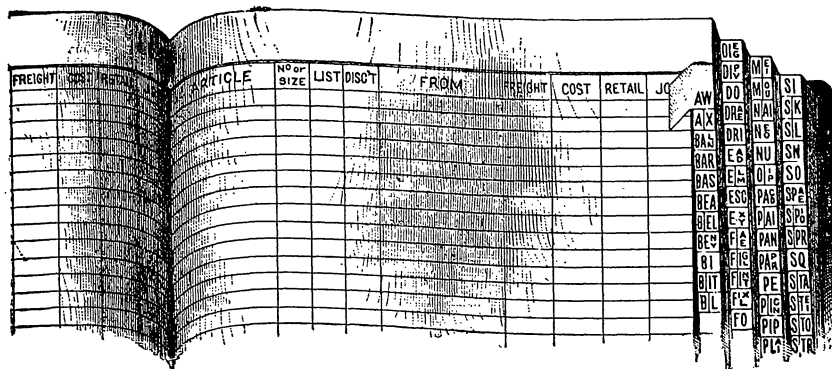
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" Saws,	"	SAW	" Cartridges,	"	CAR	" Shovels,	"	SH _R
" Pumps,	"	PUM	" Rules,	"	RU _P	" Grindstones,	"	GRI
" Bits,	"	BIT	" Locks,	"	LO	" Stones,	"	STO

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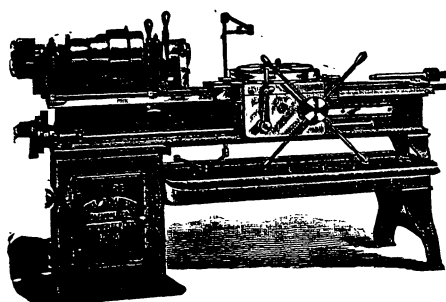
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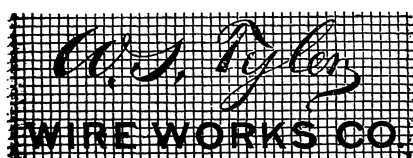


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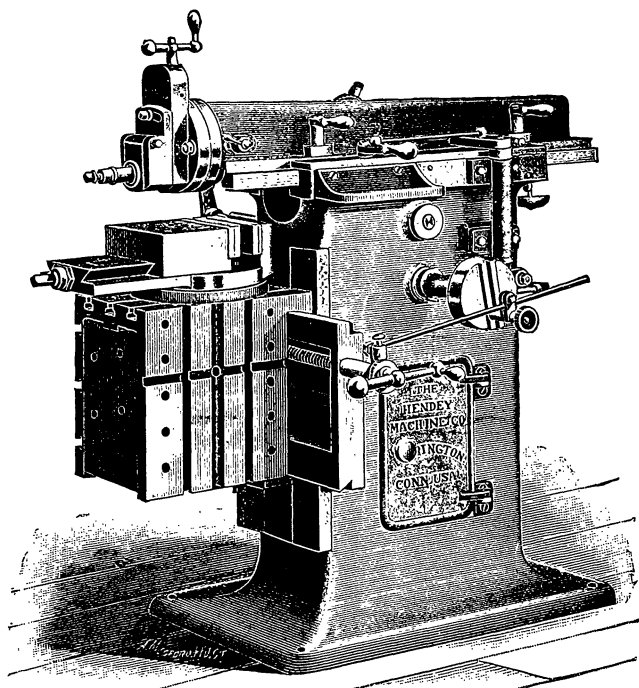
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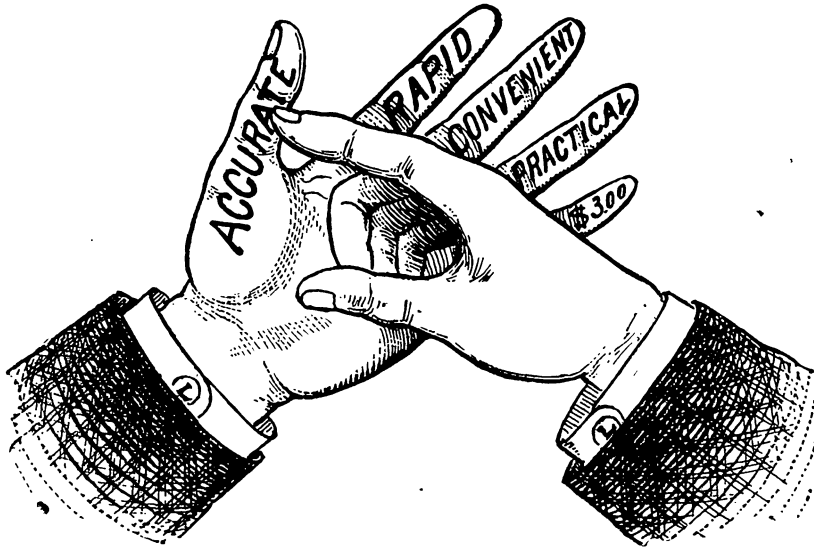
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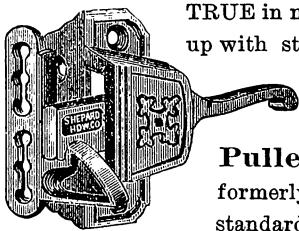
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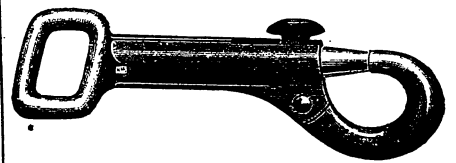
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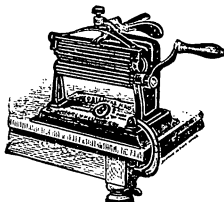
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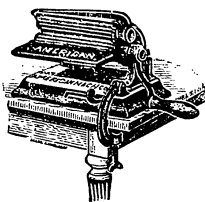
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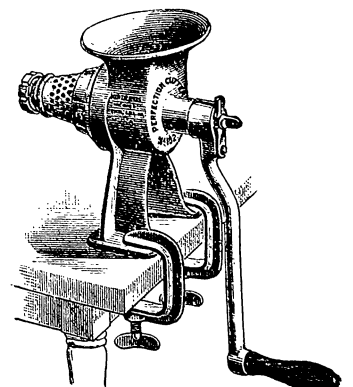
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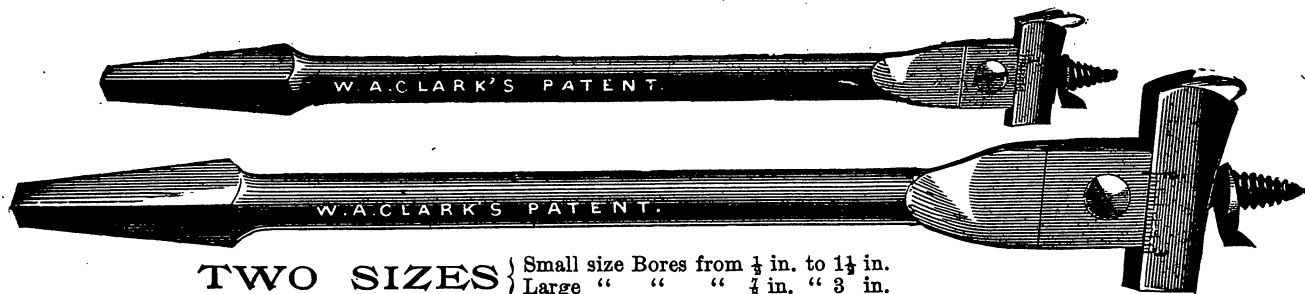
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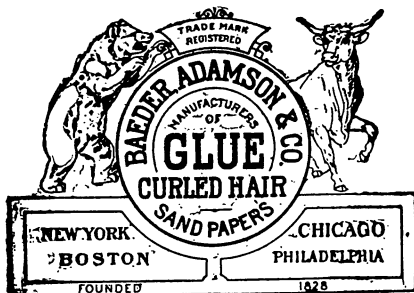
SPECIAL CUTTERS: No. 5—For Large Bit, Bores from 3 in. to 4 in. No. 6—For Large Bit, Bores from 4 in. to 5 in.

Stock and workmanship superior to all others. Every part interchangeable.

Quality guaranteed. For sale by all Hardware Dealers.

Manufactured by **R. H. BROWN & CO.,** New Haven Conn.

*You take no risk on the quality
We make only the best!*



**Sand
Papers**

IN
Reams and Rolls

Flint Paper
Garnet Paper
Emery Paper
Emery Cloth

HAIR FELTING for covering Boilers, Steam and Water Pipe, and lining Refrigerators.

BAEDER, ADAMSON & Co.

730 MARKET STREET, PHILADELPHIA.
67 BECKMAN STREET, NEW YORK.
143 MILK STREET, BOSTON.
182 LAKE STREET, CHICAGO.

THE GEM SOLID STEEL MINCER

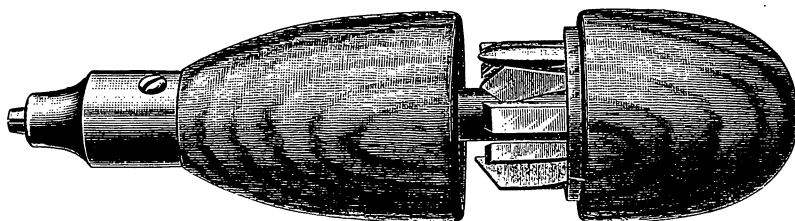


Single
and
Double Blades.

Handle and Blade Formed in one piece.
Always Clean. Indestructible.
No Rivets to Wear Loose.
No Wooden Handle to Shrink, Swell, loosen,
Split, or Fill with Rancid Grease.

MANUFACTURED BY
PALMER HARDWARE MFG. CO.
TROY, N. Y.

Tool Holder No. 6.



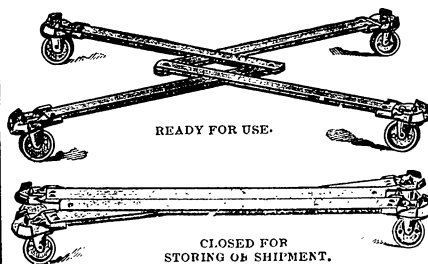
This handle is arranged with separate cell for each tool, as shown in the cut. It is made from cocobola wood, with the metal or chuck end nickel plated. The finish of the whole tool is of the very best, and it presents an attractive appearance. The tools, twelve in number, are of same quality as those put up with our Nos. 1, 4 and 5 handles.

Price \$9.00 per dozen with same trade discount as on other numbers.

MILLERS FALLS CO.,

93 READE ST., NEW YORK.

Lock Frame Stove Trucks.



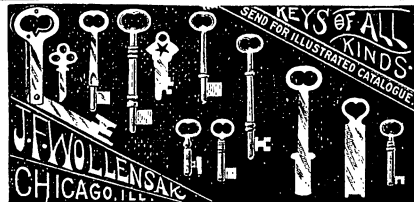
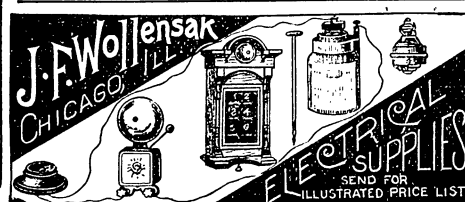
Fit any stove, large or small, without nuts, bolts, screws or yokes. Have the best ball bearing casters.

Fully warranted. Price, \$15.00 and \$18.00 per dozen.

FOR SALE BY MANUFACTURERS

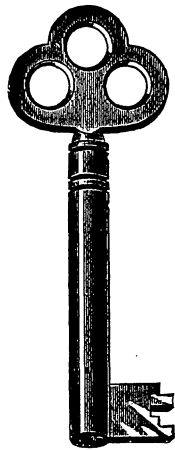
RANDALL & WARD,

Le Roy, N. Y.

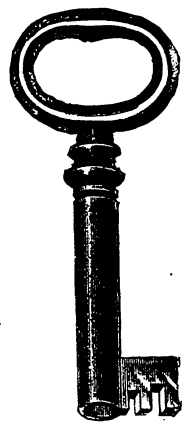


CABINET LOCKS

OF EVERY KIND.



DRAWER LOCKS,
CUPBOARD LOCKS,
WARDROBE LOCKS,
CHEST LOCKS,
DESK LOCKS.



A complete line of more than 1000 list numbers exclusive of our old
and complete line of

YALE CABINET LOCKS.

THE YALE & TOWNE M'F'G CO.,

STAMFORD, CONNECTICUT.

New York. Chicago. Philadelphia. Boston. Pittsburg. San Francisco

The only question is Is it Le Page's?

If it is you have made a sale. **HUNDREDS of THOUSANDS of PLEASED and SATISFIED CUSTOMERS** testify to the merits of

~LE PAGE'S LIQUID GLUE.~

If you sell it you do not have to **WASTE ANY TIME** in answering questions as to its quality.

The people **KNOW** that **LE PAGE'S GLUE** is the **BEST**. They have used it for years and have proved our claims to be true.

It is the only Glue made **WITHOUT ACIDS**.

A dealer who regards his time as worth anything will not risk losing his **CUSTOMERS' CONFIDENCE** by trying to sell something which is **CLAIMED** to be "just as strong" and "just as good as LePage's."

Don't let your customers go to another store for what they want, but **SELL THEM WHAT THEY ASK FOR**.

We can furnish original and attractive advertising matter for "**LE PAGE'S GLUE**" upon request.

SEND FOR CIRCULARS AND PRICE-LIST.

RUSSIA CEMENT CO., Gloucester, Mass.

NEW YORK OFFICE, 95 Reade and 113 Chambers Streets.

PACIFIC COAST OFFICE, 23 Davis St., San Francisco, Cal.

AN ELEGANT TRADE CATALOG

Attracts attention and makes customers. The addition of a highly artistic Embossed Cover creates a good impression at first glance. Our business is to design and make catalogs complete, including engravings.

GRIFFITH,

AXTELL &

CADY CO.

Holyoke, Mass.

Send six cents in stamps for our catalog "E," showing original Embossed Cover designs. **DESIGNERS PRINTERS EMBOSSEERS**

'CARPENTERS' & MACHINISTS'

IRON BENCH LEVEL

WITH DOUBLE PLUMB.

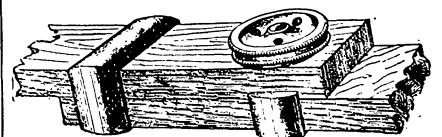
No. 5. 6 in.



MANUFACTURED BY

C. F. RICHARDSON & SON,

ATHOL, MASS.



Extension Rules and Hardware Specialties. Send for Catalogue. **RANSON HARDWARE CO., Burlington, Vt.**

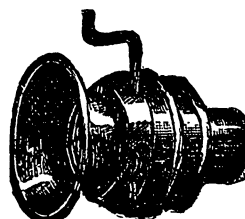
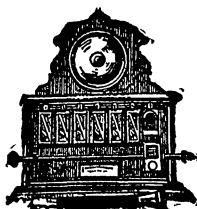
Triple and Quadruple Expansion Engines and Boilers and their Management. By A. RITCHIE LEASK. 59 Illustrations, 12mo, cloth \$3.75. For Sale by David Williams, 98-102 Reade St. N. Y.

W. R. OSTRANDER & CO.,

204 FULTON STREET, NEW YORK,
Manufacturers of

SPEAKING TUBES, WHISTLES, ORAL, ELECTRIC MECHANICAL AND PNEUMATIC ANNUNCIATORS AND BELLS.

Complete outfits of Speaking Tubes, Whistles, Electric, Mechanical and Pneumatic Bells. A full line always in stock. Send for new catalogue. Factory, DeKalb ave. near Knickerbocker, Brooklyn, N. Y.



W. & B. DOUGLAS, MIDDLETOWN, CONN.

Branch Warehouses: 85 and 87 John St., New York; 197 Lake Street, Chicago, Ill.

THE OLDEST AND MOST EXTENSIVE MANUFACTURERS OF

Pumps, Hydraulic Rams, Garden Engines,

Yard Hydrants, Street Washers, Galvanized Pump Chain, Wind Mill Pumps and other Hydraulic Machines in the World.

DOUGLAS' DIAPHRAGM PUMPS, "Loud Patent."

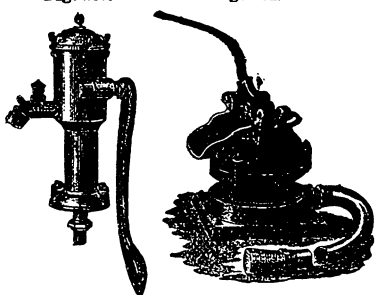
A LARGE CAPACITY AND EASY WORKING PUMP FOR

Water Works, Sewer Contractors, Foundation Builders, Mines, Quarries;

Fig. 209.

Fig. 381.

Fig. 145.



or wherever it is desired to raise a large quantity of water by
hand power.

The pump has large valves (accessible by hand), and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

CAPACITY

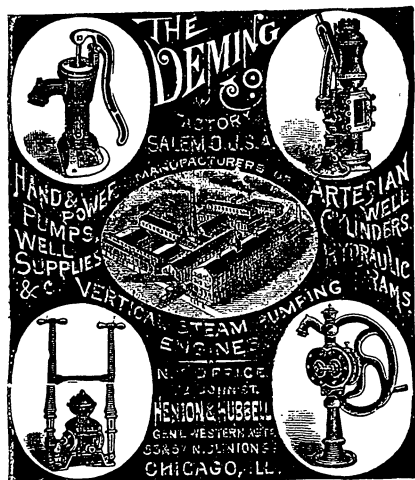
from 3,000 to 4,500 gallons per hour.

These pumps are simple, durable and low priced.
Made either as shown in cut for Hose or for **IRON** Pipe Suction underneath.

Send for Circular and Price List.



C. I. Grindstone Frame.



PRENTISS' PAT. VISES.

The Leaders for 20 Years.

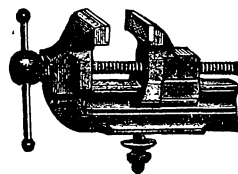
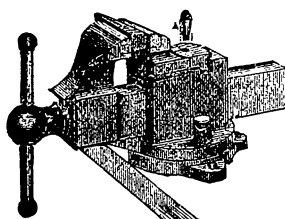
Send for Illustrated Catalogue
of

ALL KINDS OF VISES.

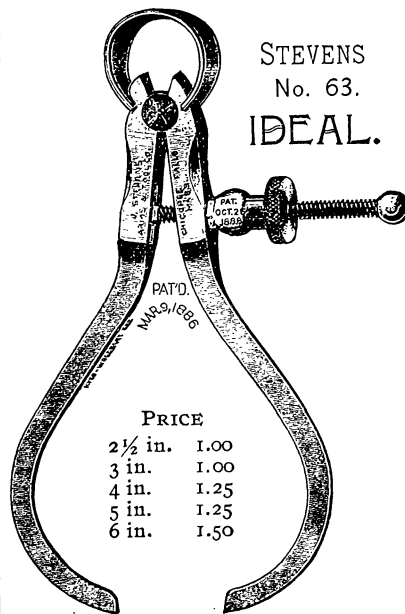
PRENTISS VISE COMPANY,

MANUFACTURERS,

44 Barclay St., New York.



PATENT SPRING CALIPERS.



STEVENS

No. 63.

IDEAL.

PRICE

2 1/2 in.	1.00
3 in.	1.00
4 in.	1.25
5 in.	1.25
6 in.	1.50

FACTS.

The Stevens "Ideal" Spring Nut and Washer combined allows a Caliper and Divider to be instantly opened or closed at pleasure without turning the nut.

Gently compressing the legs and placing thumb and finger on knurled part of nut it can be moved to any point desired, or used for adjustment by turning.

Sell

Good

Tools.

J. STEVENS ARMS & TOOL CO.,

P. O. BOX 5720,

Chicopee Falls, - Mass.

FINEST

TOOLS
FOR
MECHANICS.

SEND FOR CATALOGUE OF
FULL LINE.

Stevens' Rifles and Shot Guns.

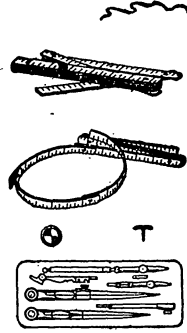
F.E. MYERS & BRO.



+ CATALOGUES FREE +

Ashland Pump and Hay Tool Works.

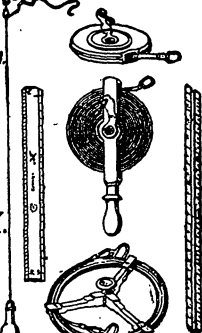
The New York Safety Bomb Water.
The Manufacturing Bomb Water.
"The Improved Bombing Bomb Water."
Made special for the use of the United States.
Thousands in use for all kinds of work.
THE STORM MANUFACTURING CO.
NEWARK, NEW JERSEY
Formerly of Poughkeepsie, New York.



KEUFFEL & ESSER CO. • NEW YORK •
BRANCH: CHICAGO.
• FACTORIES: HOBOKEN, N.J. •

MANUFACTURERS OF EXCELSIOR MEASURING TAPES.
SUPERIOR QUALITY, LATEST IMPROVED. GREATEST VARIETY.
STEEL • METALLIC • LINEN • POCKET TAPES.
EXCELSIOR BAND CHAINS FOR SURVEYORS, LAND CHAINS, &c.
K & E CO FOLDING POCKET RULES.
NO WARPING, NO SHRINKING, NO ILLEGIBLE JOINTS, NO BULK.
2 3 4 5 6 8 FOOT, ALSO WITH PATENT SPRINGS.
FLAT & TRIANGULAR BOXWOOD SCALES, BEST MADE.
PLUMB BOBS, THUMB TACKS, DRAWING INSTRUMENTS.

PRICE LISTS & QUOTATIONS PROMPTLY SENT.





**STANDARD
Tool Co.**
MANUFACTURERS OF
*Mechanics'
Fine Tools.*
ATHOL, MASS. U.S.A.
EVERY TOOL WARRANTED.
Catalogue Free.

Athol Machine Co.,
Selling Agents.



**HOLLANDS'
OFFSET JAW
VISE.**

Specially adapted
for drill press work
where chucks can-
not be used and
equally good for
special or regular
bench work.

Hollands Mfg. Co.,
ERIE, PA.,
Manufacturers all
styles VISES.

**Red Jacket
Mfg Co.**

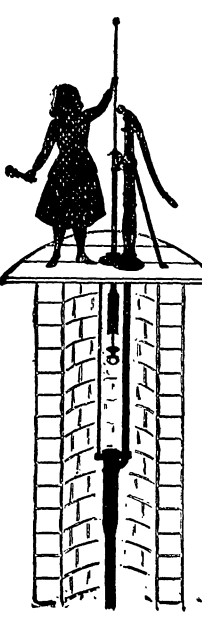
DAVENPORT
IOWA, U.S.A.

Manufacture the
Only Pump

in the U. S.
that works easily in
wells of any depth, and
can easily be fixed by
any one with a monkey
wrench without tak-
ing the pump from
well or tearing up the
platform.

WRITE FOR PRICES.

Chas. Millar & Son,
General Eastern Agts.,
UTICA, N.Y.



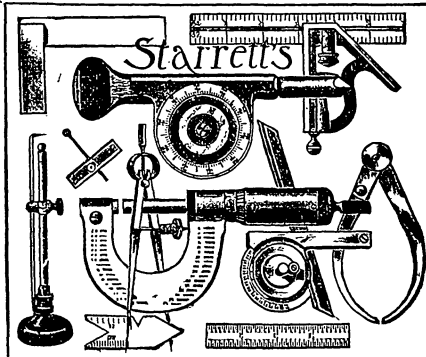
Skilled mechanics prefer them

Live dealers sell them

Best
in
work-
manship
Finest
in
finish
Latest
in
improve-
ments

STARRETT'S

For
all
workers
in
metal
or wood
Every
tool
warranted
satisfac-
tory

**FINE TOOLS**

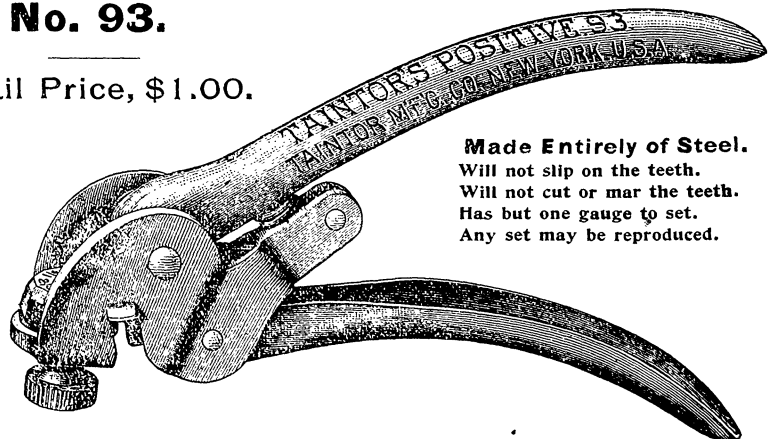
Send for Catalogue

L. S. Starrett, Athol, Mass.

Taintor Positive SAW SET

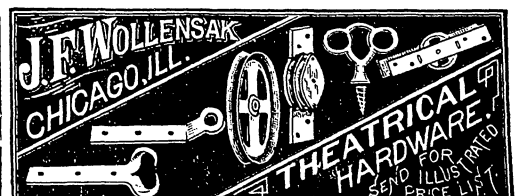
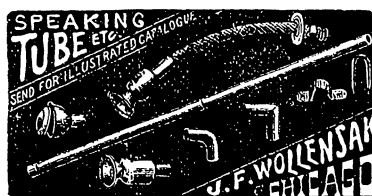
No. 93.

Retail Price, \$1.00.



Made Entirely of Steel.
Will not slip on the teeth.
Will not cut or mar the teeth.
Has but one gauge to set.
Any set may be reproduced.

Sole Agents: WIEBUSCH & HILGER, Ltd., NEW YORK, U. S. A.



GEO. N. CLEMSON, Pres.

S. S. BATTIN, Vice-Pres.

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THE NATIONAL SAW CO.,

OPERATING

Wheeler, Madden & Clemson Mfg Co., Wood-rough & McParlin, Richardson Brothers, Harvey W. Peace Co., Monhagen Steel Works, Wood-rough & Clemson, Pennsylvania Saw Co.

SEND FOR PRICE-LIST.

GENERAL OFFICE:

NEWARK, - - New Jersey,

SAWS

WENTWORTH'S PATENT NOISELESS SAW VISES, WITH RUBBER CUSHIONED JAWS.

Prevent all vibration and render Saw Filing noiseless.
Will make no more noise than Filing on a Solid Piece of Iron.

Have a Larger Sale than All Other Kinds Combined.

PRICE LIST.

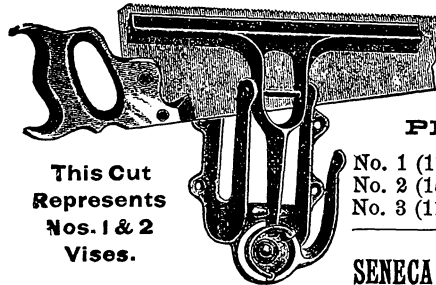
No. 1 (11 inch Jaws),	-	\$15.00
No. 2 (15 inch Jaws),	-	21.00
No. 3 (11 inch Jaws),	-	18.00

LIBERAL DISCOUNT TO THE TRADE.

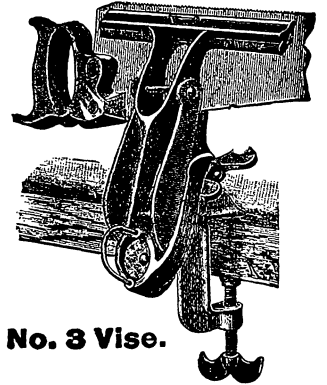
LONGEST JAWS, HEAVIEST AND
BEST FINISHED.
Sold by all leading jobbers of gen-
eral Hardware at Factory Prices.

—MANUFACTURED BY—

SENECA FALLS MFG. CO., 265 Water St., Seneca Falls, N. Y.



This Cut
Represents
Nos. 1 & 2
Vises.



No. 3 Vise.

E. C. ATKINS & CO., Indianapolis, Ind.

BRANCH HOUSES:
Memphis, Tenn.
Minneapolis, Minn.
Chattanooga, Tenn.

Circular, Band, Cross-Cut and Hand Saws.

Diamond.
Rex.
American.



Dexter.
Lance.
Columbian.

A
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K
I
N
S

Fine Steel, Patent Temper.

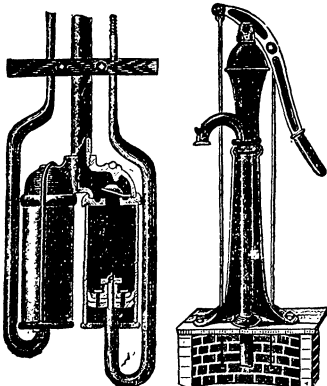
Furnish your Trade with the Best Saws.

The ATKINS Saws Lead them all.

A
T
K
I
N
S

Write for Price-List and Trade Prices:

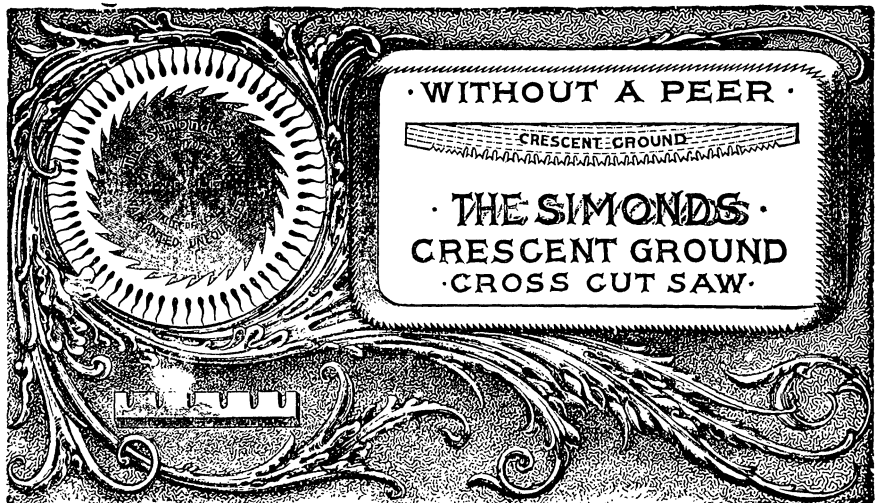
Peters Double Cylinder Force Pump. EASIEST WORKING PUMP IN THE MARKET.



Will send any responsible dealer a sample
to be returned in 30 days if not perfectly
satisfactory.

WRITE FOR CIRCULARS AND PRICES.

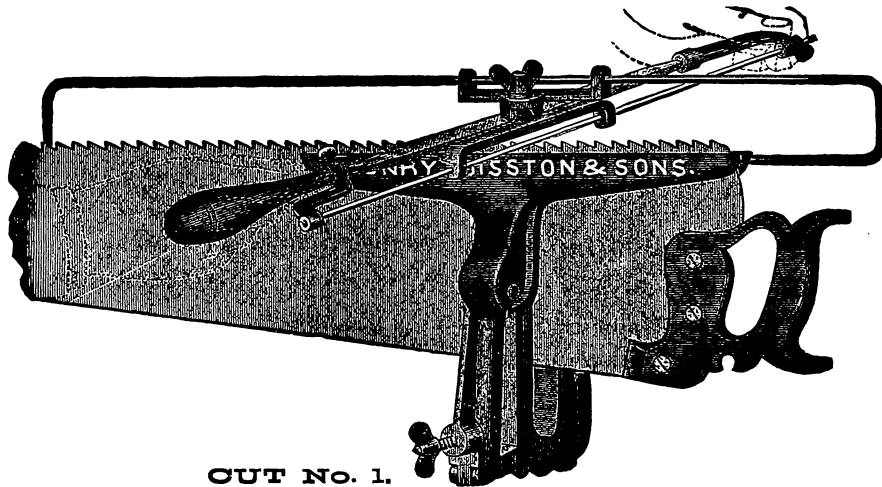
PETERS PUMP CO., - KEWANEE, ILL.



Simonds Mfg. Co. Simonds Saw Co.
FITCHBURG, MASS. CHICAGO, ILL. SAN FRANCISCO CAL. PORTLAND, ORE.

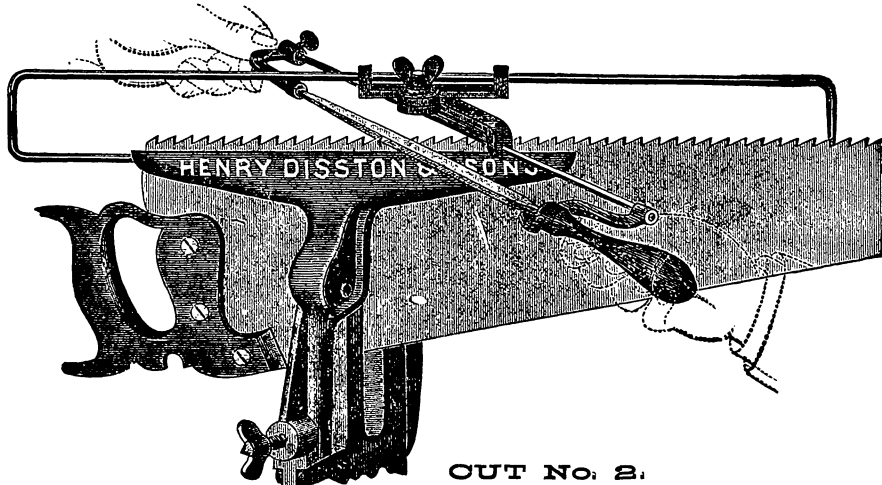
DISSTON'S Improved Saw Clamp AND FILING GUIDE.

ESPECIALLY DESIGNED TO ASSIST THOSE NOT SKILLED IN THE ART
OF SAW FILING TO FILE A SAW CORRECTLY.



CUT No. 1.

Cut No. 1 shows a saw and the attachment in proper position for filing the first side; and Cut No. 2 shows the saw and attachment reversed and in position to file the second side. There are three marks on one of the hubs of the swivel attachment, and one mark on the other. One of the three marks shows when it is in position No. 1, and the other designates when it is in position as shown in No. 2. The third, or centre, marks show when it is in position for filing Rip Saws.



CUT No. 2.

To obtain the correct position, loosen the wing nut and move the guide around to the point desired; after tightening wing nut, loosen screw in file handle, then turn handle until file gives the shape tooth wanted.


A good way is to select a tooth of correct shape and let file down into it, tighten set screw in handle, then file a tooth to see if the shape suits. If not turn the file a little to the right or left and try another tooth until the proper shape is obtained. Then file every other tooth, see cut No. 1; when one side is filed, reverse saw and attachment and adjust as in No. 2, and file the other teeth. For Rip Saws, place the file at right angles with the saw and file every tooth. Always keep the file as nearly horizontal as possible.

This filing guide is sold only attached to our No. 3 Improved Clamp or Vise, and not sold separately. We recommend this as the best saw clamp on the market, being quickly and easily adjusted, and not liable to get out of order.


Write for price including No. 3 Clamp, Filing Guide, File and Handle complete: Packed one in a wooden box.

Henry Disston & Sons, Philadelphia, Penn. INCORPORATED.

H



ARCADE FILE WORKS.



WARRANTED FILES AND RASPS.

EASTERN OFFICE.
NEW YORK.

FACTORY
ANDERSON, IND.

WESTERN OFFICE.
CHICAGO.

THE FILES THAT LEAD THEM ALL

THE BEST EQUIPPED FILE WORKS IN THE WORLD.

The fact that the Arcade File Works alone use the improved File Machinery recently invented by Alfred Weed, and the even heat of natural gas, enables them to produce files that cut faster and wear longer than any on the market.

Warranted Better than the Best ENGLISH ANVIL

Face in one piece of BEST TOOL CAST STEEL, PERFECTLY WELDED, perfectly true, of hardest temper, and never to come off or "settle." Horn of tough *untempered steel*, never to break or bend. *Only Anvil made in the United States fully warranted as above.*

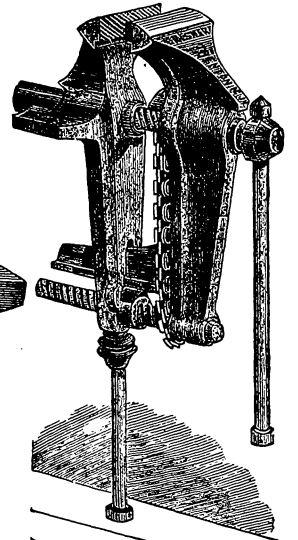
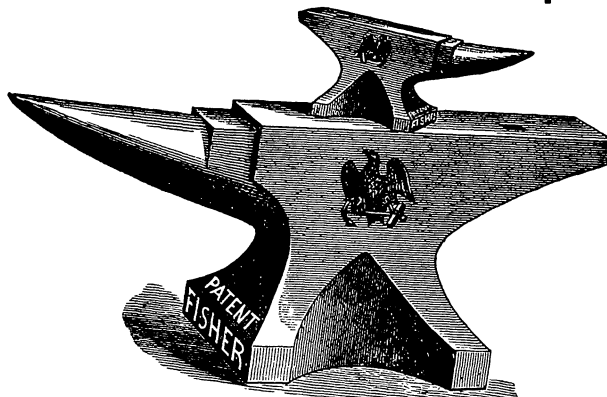
FISHER DOUBLE-SCREW VISE

IS FULLY WARRANTED STRONGER THAN ANY OTHER LEG VISE, AND ALWAYS PARALLEL. Is the best Vise for Machine Shops and Blacksmiths, and for all heavy work. ACCURATE AND DURABLE. Send for Circular.

ESTABLISHED 1843.
MORE THAN 200 DIFFERENT PATTERNS.

None Genuine without our Trade-Mark.

EAGLE and "FISHER" Stamp.



EAGLE ANVIL WORKS,

Trenton, N. J.

Sold in New York by our Agents, J. C. McCarty & Co., 97 Chambers St., The Russell & Erwin Mfg. Co., 45 Chambers St.



Who Has Not Had Bad Hose?

Who has not lost time, patience, money, by attempting settlement for such goods?

THE CAUSE in nine cases out of ten is the lapped seam.
THE REMEDY is in buying our

PATENT SEAMLESS TUBE HOSE,

made by machinery, the tube run like lead pipe, through a die. There is no lapped tube, no seam, no cracks, no defects; water cannot get through to rot the duck and cause the hose to burst.

Made in All Sizes and Kinds of Garden, Engine, Steam, Fire, Brewers', Cotton Hose, &c.

Order a Sample Bale of our Seamless-Tube Hose—Best in the World, costs no more than ordinary lapped-seam hose. The different colors, Red, White, Black, Green and Yellow, make a fine window or sidewalk attraction.

CLEVELAND RUBBER WORKS

of the Mechanical Rubber Co.,

CLEVELAND, O.

Makers of Mechanical Rubber Goods, Clothing, Druggists' Sundries, Specialties, Etc.



SALES OF
Over Two Million Feet
—OF—
GARDEN HOSE
alone during the past year, distributed throughout the United States, and not a single piece complained of, justifies us in guaranteeing that it will give absolute satisfaction.

We were awarded an order for 25,000 ft. for World's Fair of our celebrated
Seamless-Tube
COTTON RUBBER-LINED HOSE

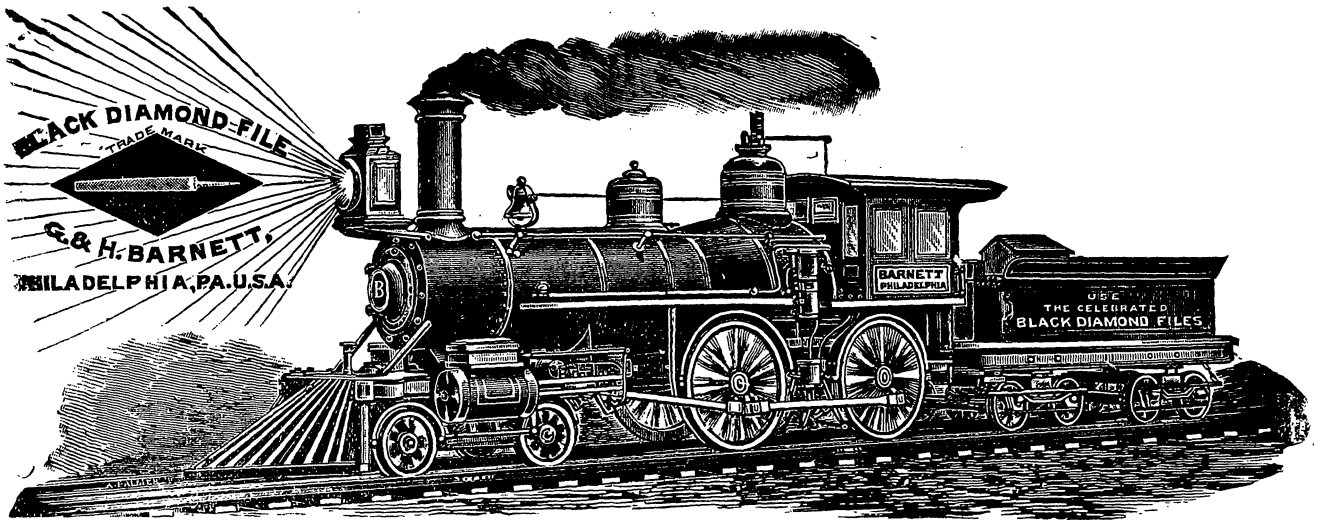
We Want Your Trade.
Send for 60-page Catalogue.
Write for Prices and Samples.

A practical means of rapidly reaching absolutely accurate results without the mental wear of computing.

LADD'S DISCOUNT BOOK.

It gives at a glance the net of any sum at a great range of discounts, simple and complex, and it is accurate, rapid and practical. Price, \$3.00; Double Indexed Edition, \$4.00.

Mailed, postpaid, upon receipt of price by **DAVID WILLIAMS, 96-102 Broadway, New York.**

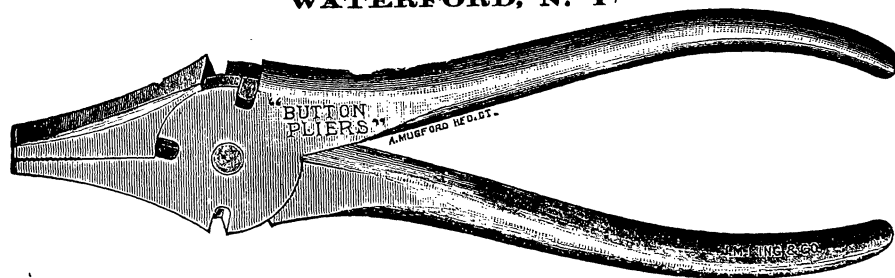


THE LARGEST AND MOST COMPLETE FILE WORKS IN THE WORLD.

NICHOLSON FILE CO.
PROVIDENCE, R. I.

3000
VARIETIES FILES
[X.F.] AND INCREMENT CUT FILES

J. M. KING & CO.,
WATERFORD, N. Y.



Manufacturers of
BUTTON'S
Pat. Wire Cutter
AND PLIER COMBINED.

Specially Adapted for Use on Wire Fence.

Also Manufacturers of BLACKSMITHS' and MACHINISTS' STOCKS and DIES, PLUG and TAPER TAPS, HAND, NUT and SCREW TAPS, PIPE TAPS and REAMERS.

Price-List on Application.

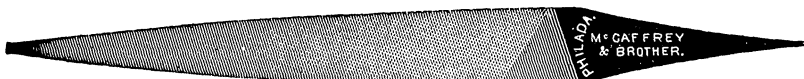
Established by DANIEL B. KING, 1829.

Philadelphia, 1876.



McCaffrey File Co.,
FIFTH and BERKS STS.,
PHILADELPHIA, PA.

For Superiority.



Manufacture and keep in stock a full line of FILES and RASPS only, for which we claim special advantages over the ordinary goods, and ask domestic and foreign buyers to allow us to compete for their trade.

Superiority acknowledged wherever used, sold or exhibited.

HOWARD IRON WORKS,
BUFFALO, N. Y.,

Manufacturers of

BOLT CUTTERS
AND NUT TAPPING MACHINES,
(Schlenker's Patent),
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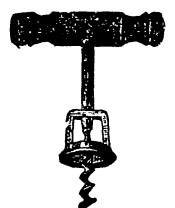
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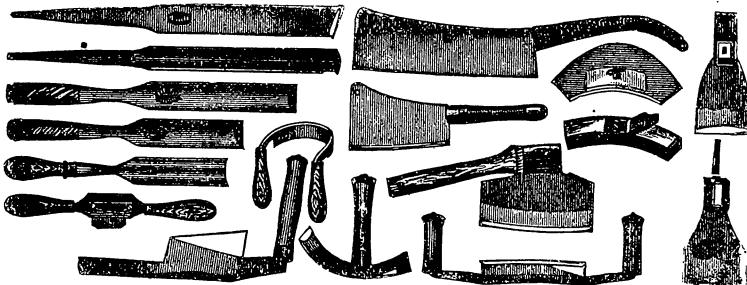
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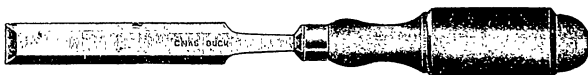


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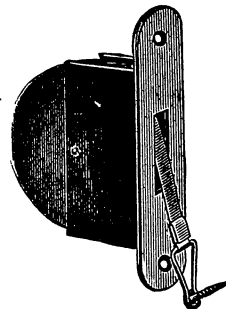
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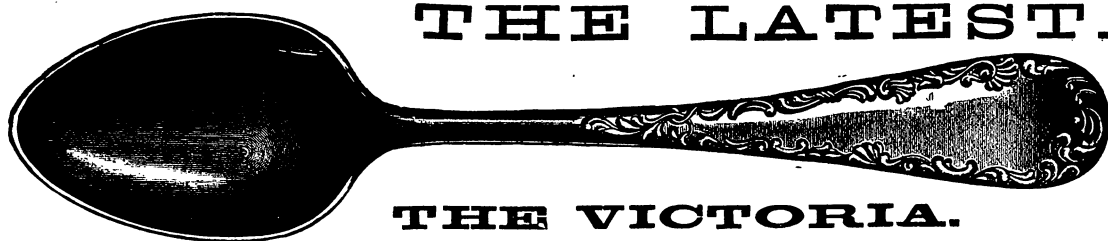


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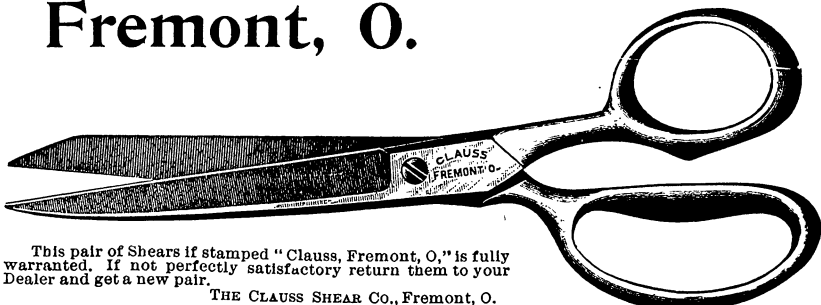


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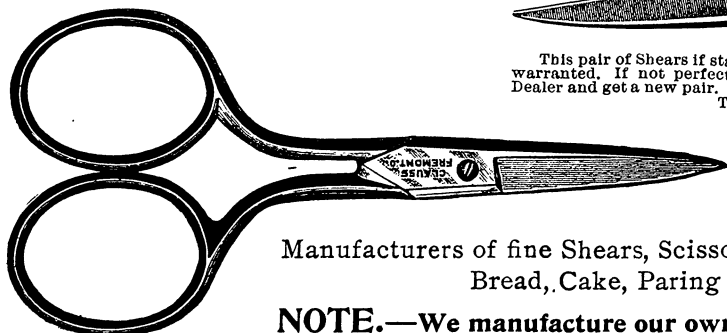
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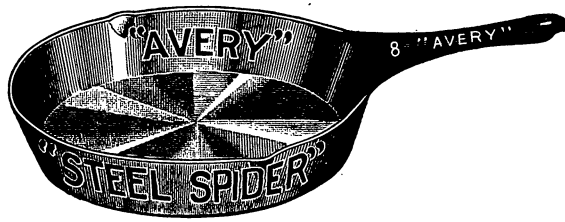
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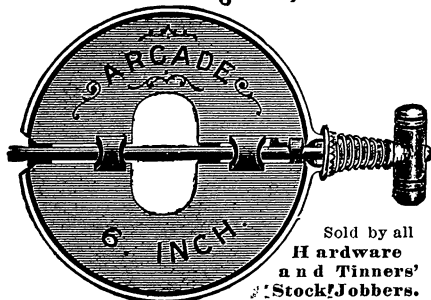
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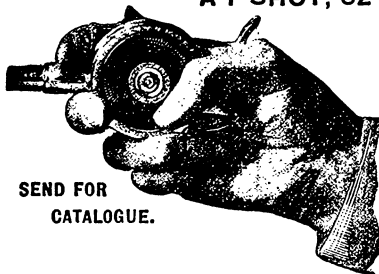
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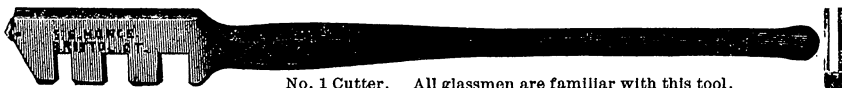
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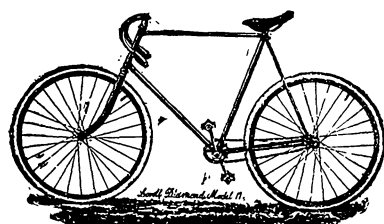
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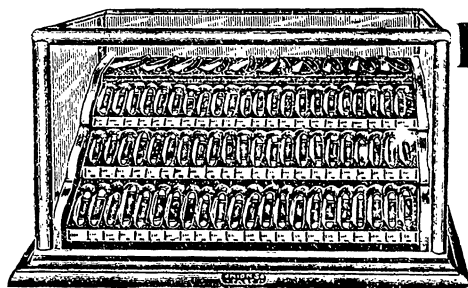
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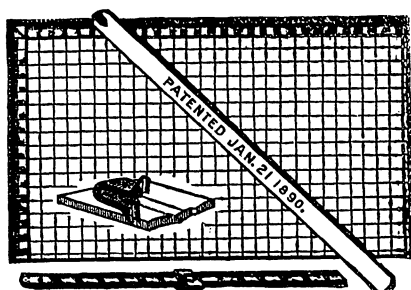
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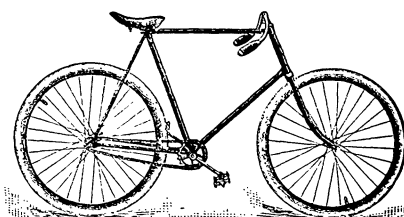
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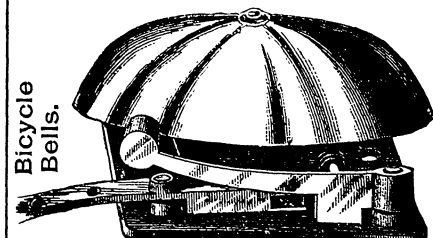
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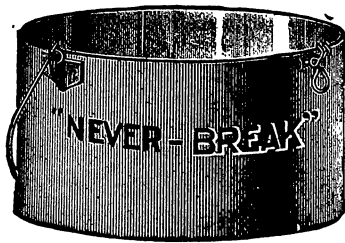
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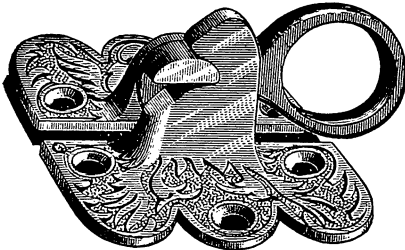


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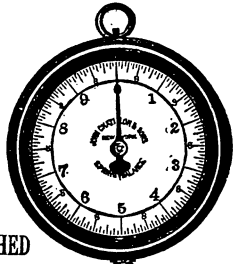
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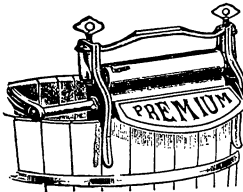
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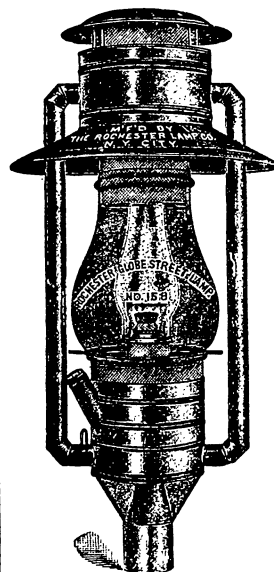
Will Burn Four Hours for One Cent.

MANUFACTURED BY

STEAM GAUGE AND LANTERN CO.,

SYRACUSE, N. Y.

Western Branch, 25 Lake St., Chicago, Ill.



**The Rochester Globe Tubular
- - Station and Street Lamp.**

It's a long name, but it tells a good deal. It tells you of a new Street Lamp with "The Rochester" Central Draft Burner. A central draft burner (round flame) gives three times the light of an old style flat-wick burner. The first and only Tubular Globe Central Draft Lamp ever made! Storms, rain, snow, sleet or hail do not affect it. Burns all night. Made with either bail or post socket, with 26 inch enamel reflector if wanted, for railroad and other uses. Takes regular No. 3 or 9 street lamp globe, to be had everywhere. For Railroad Stations, Ware-rooms, Mills, Docks, &c., it is the best lamp ever made. Price, \$6.00; send for trade discount.

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THE ROCHESTER LAMP CO.,

42 PARK PLACE, }
 37 BARCLAY ST., } NEW YORK.

This is the "SALEM" HANGER.

And when it is on the window casing, a TEN-ANT can put up ANY SHADE FIXTURE that is made without using a screw. THE MAN INTERESTED is the owner of the house THE MAN to sell the "Salem" to the owner IS THE HARDWAREMAN.

Write us for Price-List.



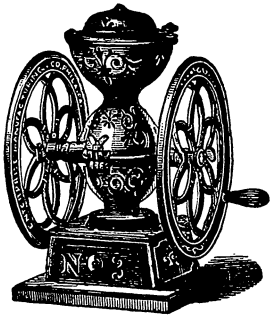
The W. A. South Co., Salem, Mass

THE ENTERPRISE M'FG CO. OF PA.

THIRD AND DAUPHIN STREETS, PHILADELPHIA.

COFFEE MILLS.

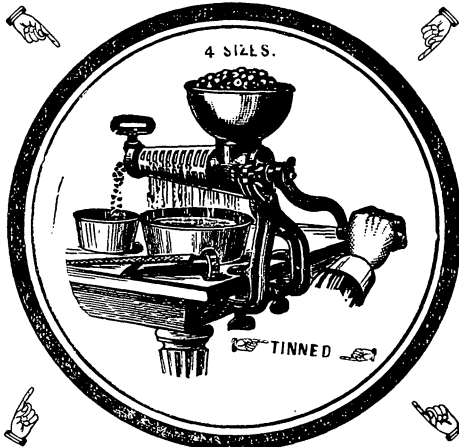
28 Sizes.



\$1.25 to \$100.00.

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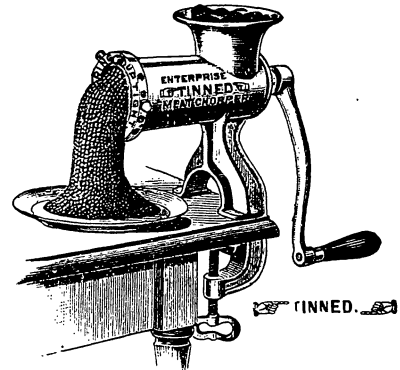
4 SIZES.



No. 24, Price, \$3.00

MEAT CHOPPERS.

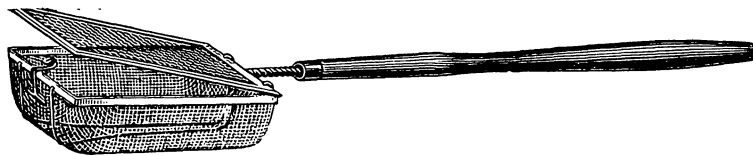
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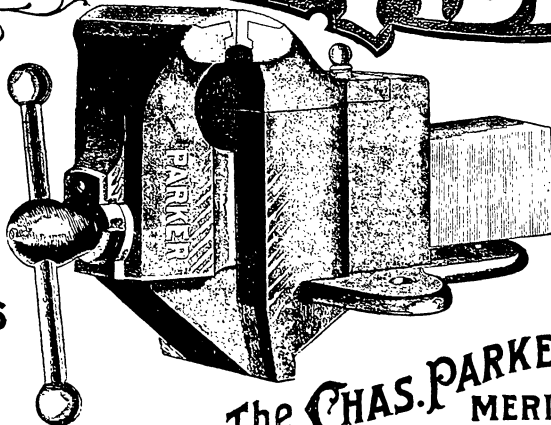
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Dealers everywhere are entitled to New Catalogue and New Prices.

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ESTABLISHED 76 YEARS.

PARKER VISE

HAS STOOD
THE TEST
OF OVER
FIFTY YEARS

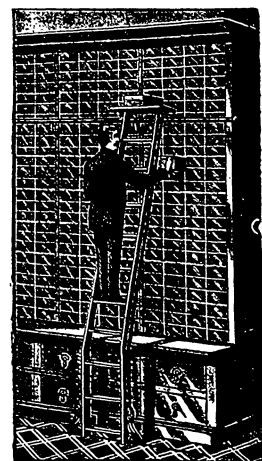


The CHAS. PARKER CO.
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This is a fac-simile of an 11x15 inch show card in gold and colors which is attractive in every hardware store. We will mail one to any hardware dealer who will place it conspicuously in his store.

THE Bicycle Step Ladder.

Especially adapted for
Hardware Stores.



THE ---
NEWEST,
NEATEST,
SIMPLEST,
EASIEST OPERATED,
and SAFEST



----- STORE LADDER MADE.

Highest Award World's Fair,
WRITE US.

The Bicycle Step Ladder Co.,

N. Y. AGENCY:
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80 John St.

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MANUFACTURERS OF { Water Motors, Self-heating Sad Irons and Soldering Irons, Combination
Electric Fan Water Motors, Ventilating Fans and Ventilated Bread Boxes.

Send for Illustrated Catalogue with Wholesale Price List.

NEW WATER MOTOR, \$5

BOLGIANO'S LITTLE GIANT, No. 1,
Will run your Sewing Machine, Fans and other Light Machinery.

A Week's Work
Done in a Day.
No Plumbing
Required.



NO. 3 MOTOR, \$15. For Fans, Printing Presses, Grindstones, Coffee Mills, Washing Machines.

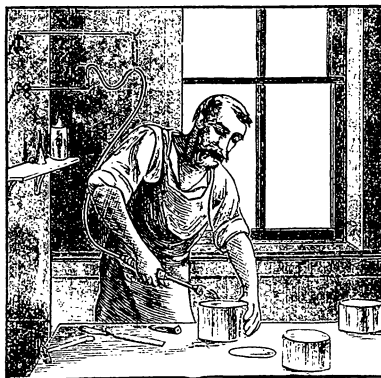
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LIVES ON WATER.

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PRICE, \$5.00.

Gets hot in five minutes. No smell, no dirt, and keeps hot all the time. Very economical, as it uses the air as fuel, and a pinhole of gas to ignite the air, costing but a few cents a day.

**Breathes Air to Live.
Saves Tons of Coal.**

\$2. Bolgiano's New Air Burning Soldering Iron.

Saves Tons of Coal.

Burns air. Without smell or dirt.

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26 Warren St., New York,

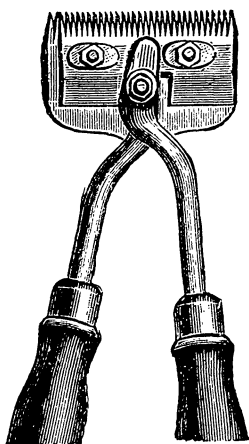
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—ALSO—

Clippers for Barbers' Use.

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61 Fulton St., N. Y.
Manufacturer of
STEEL STAMPS
For Every Purpose.
Steel Letters and Figures.
Burning Brands, Stencils,
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HAVE YOU EVER HEARD OF



THE WONDERFUL FORSTNER AUGER BIT ?

If not, it will pay you to send for a sample 4-8 bit and price-list. Sent on receipt of 55 cents. It will bore Round, Oval and Square Holes, and cannot be equalled for fine carpentry, cabinet or pattern work. Discount to dealers on application.

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Electric
Torches

FOR
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14 JETS OF LIGHT

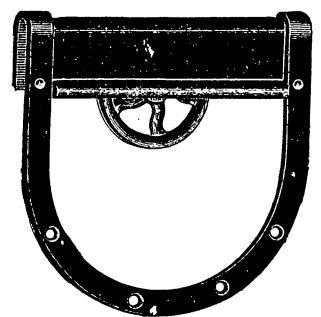


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INCHES
LONG.

FOR lighting manufacturing establishments, such as Rolling Mills, Foundries, Machine Shops, Engine Rooms, &c., &c., with a convenient, portable, brilliant, steady light, and by cheaper means than by Coal Gas.

SOLE MANUFACTURERS,

The Dangler Stove & Mfg. Co.,
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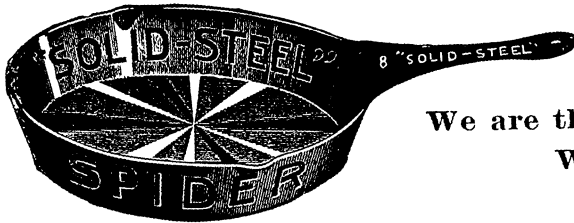
HIGHEST AWARD
WORLD'S
COLUMBIAN EXPOSITION
— ON —
BARN DOOR HANGERS.

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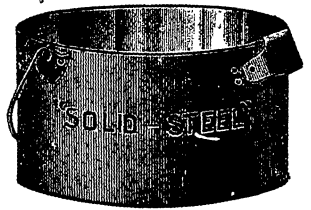
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"SOLID-STEEL" SEAMLESS HOLLOW WARE.

No Seams, no Rivets in "Solid-Steel" Ware.

We are the leaders in Steel Hollow
Ware and all Sheet
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"Solid-Steel" Mangle Kettle.

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We do Light and Heavy Stamping and Blanking. Also build Dies and Stamping Machinery.

The Wonderful "New Process" Oil Heater.

THE HEATING PROBLEM SOLVED AT A SMALL COST.

The "New Process" (Coal) Oil Heater will comfortably heat a room twenty feet square in cold weather. Is intended for use in Bed-rooms, Bath-rooms, Dining-rooms, Offices, Summer Resorts and all places where a moderate heat is required, without a flue connection.

We use with it our mammoth Globe-Incandescent lamp, with a special attachment on spreader, which, with the drum, can readily be removed, the spreader changed, the glass chimney placed in position and the Heater is converted into our 300 candle-power Globe-Incandescent lamp, the best in the world.

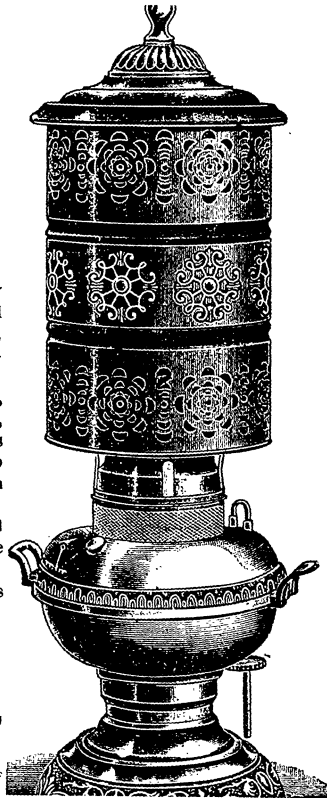
The "Heater" is very handsome. Brass fount, nickel trimmed, Russia drum, with ornamental top which can be removed, to use the grate on top for cooking.

No soot! No smoke! No odor! Construction of parts simple. Made with reference to being easily kept clean. Comfort! Convenience! Economy!

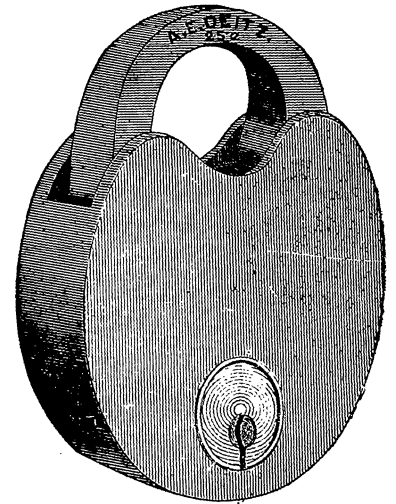
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F. M. BORDEN & BRO., 118 N. 2d St., Philadelphia, Pa., Agents for Philadelphia.

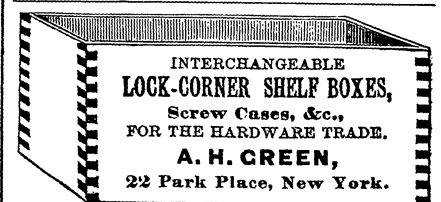


A. E. DEITZ

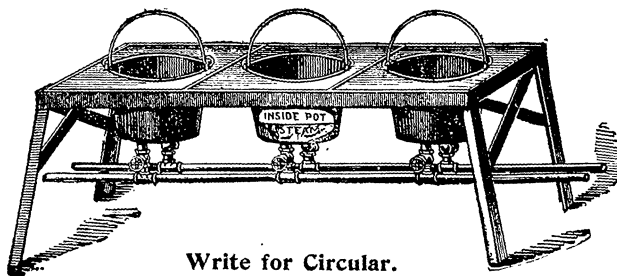


**J. C. McCARTY & CO., Agents,
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Factory, **BROOKLYN, E. D. N. Y.**



NEW S. & P. Acme Steam Glue Pot and Stand.



Write for Circular.

THE STUART & PETERSON CO. - Burlington, N. J., U. S. A.

For use in Planing Mills, Book Binderies, Furniture Manufactories, Refrigerator Manufactories, Box Factories, Pattern Making Establishments, Carriage Manufactories, Car Shops, Cabinet Manufactories, Frame Manufactories, Brush Manufactories, etc., etc.

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So Simple a Child Can Use It.

Made in three sizes, for $\frac{1}{2}$ in., $\frac{3}{4}$ in., and 1 in. hose.

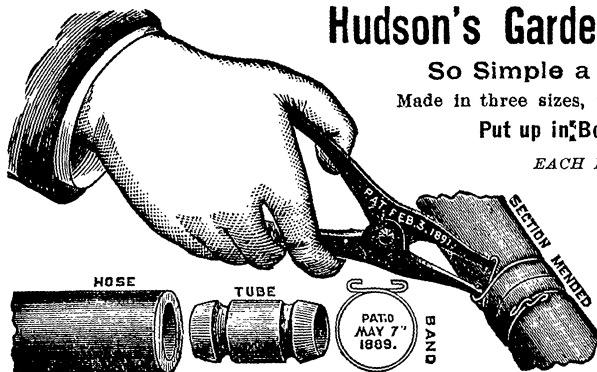
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EACH BOX CONTAINS:

1 Pair Pliers,
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6 Tubes.

Sells readily at 75 cents.
Liberal discount to Dealers.

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C. E. HUDSON & CO., Manufacturers, Leominster, Mass.

Reliable Torches are
what you want.



Made either for Oil or
Gasoline.



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Arranged by R. R. WILLIAMS, Hardware Editor of the Iron Age.

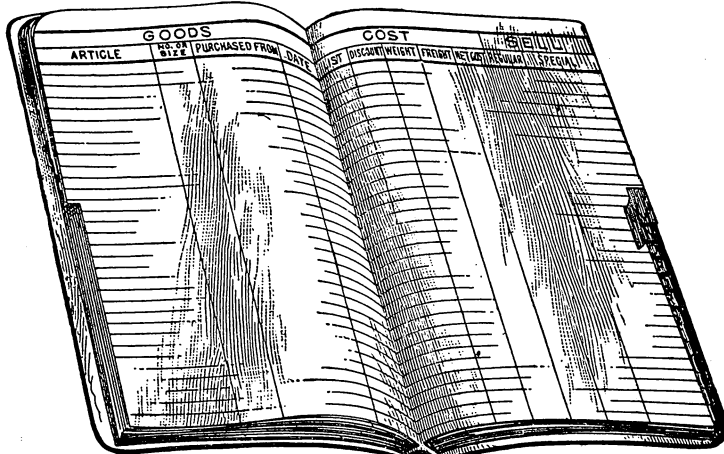
These Books are printed on paper of superior quality and bound in grain seal leather.

Columns are provided for the name and number or size, for noting from whom purchased, date of quotation or purchase, list and discount, and for entering freight expenses as an element of cost. Under the heading of selling prices, the regular and any special price, or remarks in regard to the goods are given place. This book goes into considerable detail in describing the goods and cost prices. It has been arranged in accordance with the views of many Hardwaremen whose methods are careful and exact.

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FOUR EDITIONS:

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A F, 200 pages with flap, - - - - -	1.25
A 2, 400 pages, - - - - -	1.50
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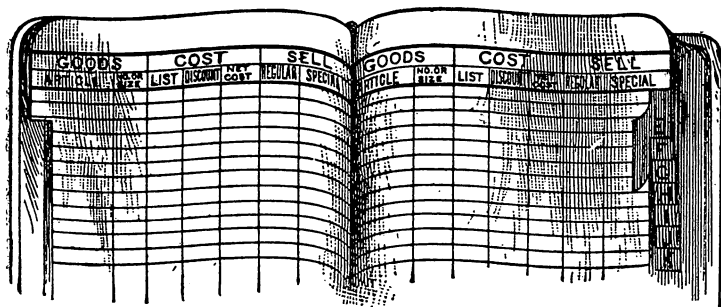
Hardware Price Book A.

In this book each page is complete, and the record of prices does not, as in Book A, run across two pages. Thus it accommodates a larger range of goods with much less detail in the record. It is adapted for office or store use, and by the use of familiar abbreviations, sufficiently large for the convenient and concise record of prices.

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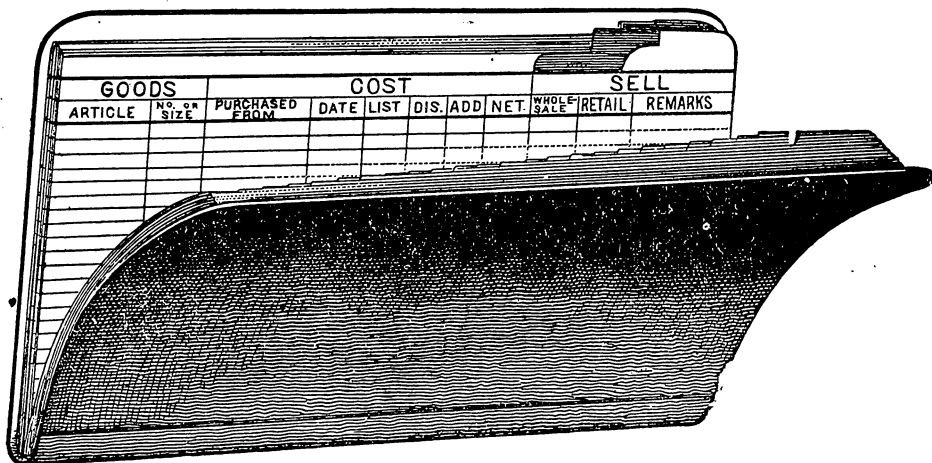
Hardware Price Book B.

The headings in Book C run across the top, in a line parallel with the hinge. In this way a very complete record can be kept on a single page. The details of weight and freight contained in Book A are omitted, and a single column headed "Add" given for the insertion of freight or other expenses which it is desirable to include in the cost. Under the selling prices space is left for the wholesale price, the retail price, and also for any remarks in regard to cost of the goods, desirability of pushing them, or other matters.

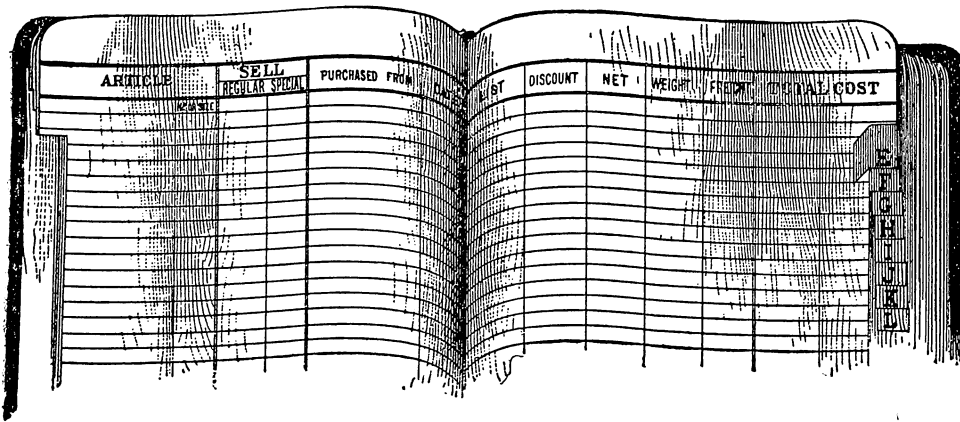
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Hardware Price Book C.



Hardware Price Book D.

Price Book D will recommend itself particularly for desk and store use, and for salesmen on the road.

The name of the article, its number or size and the selling price are the first to meet the eye on the left-hand page, as embodying information desired when the selling price is required. The other headings follow in convenient order, by which a detailed memorandum regarding the goods may be kept, the whole being seen at a glance. A number of pages at the back of the book are arranged for memoranda, which will be found a great convenience. This arrangement is adapted to the requirements of the trade in this direction.

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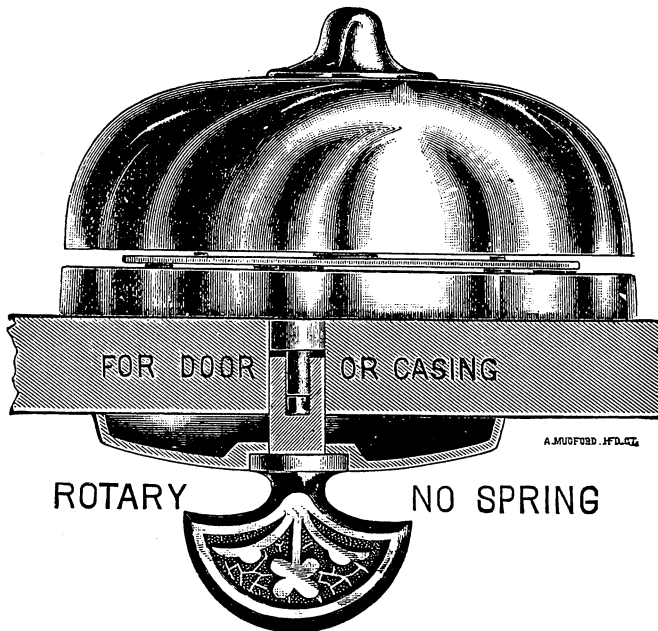
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ELECTRICAL RESULTS.

3 Inch.

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No. 92, Bronze Plated.
Per Doz., \$17.50.



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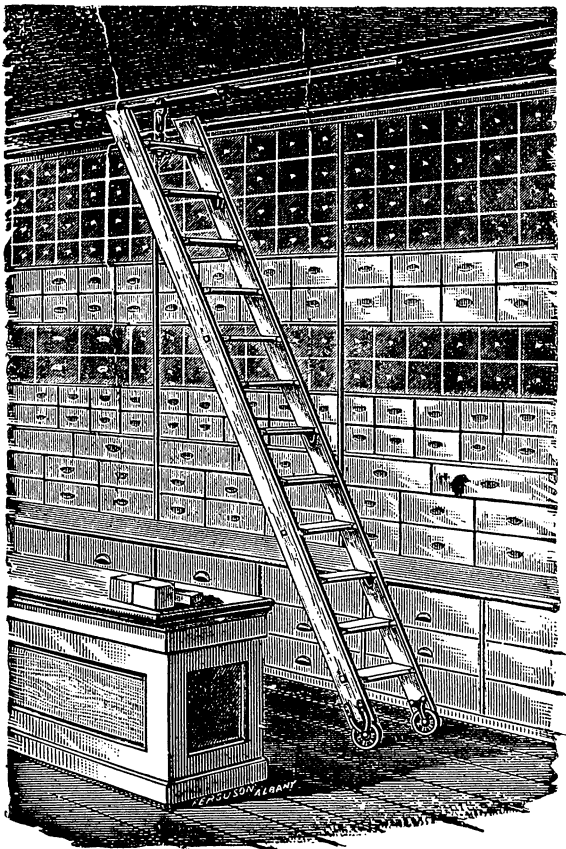
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Simply turning the knob about **one-fourth** in either direction produces about **ten clear, full tones**, which though not startling or annoying, can be better heard all through the house than any bell ever made to imitate Electrical Results.

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THE "NOISELESS" STORE LADDER.



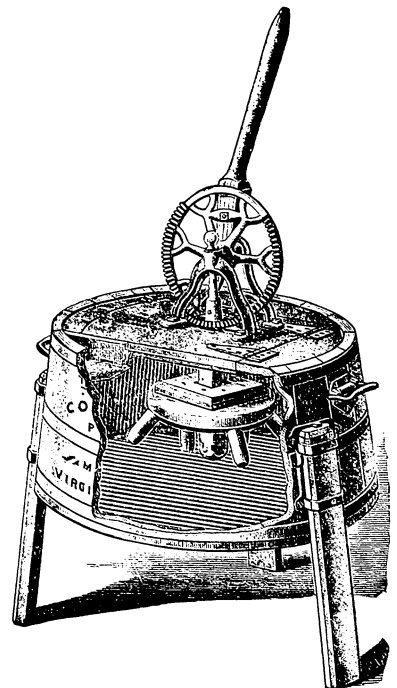
The latest and best. Perfectly noiseless. Neat in appearance.

Manufactured by

M. CROISSANT,

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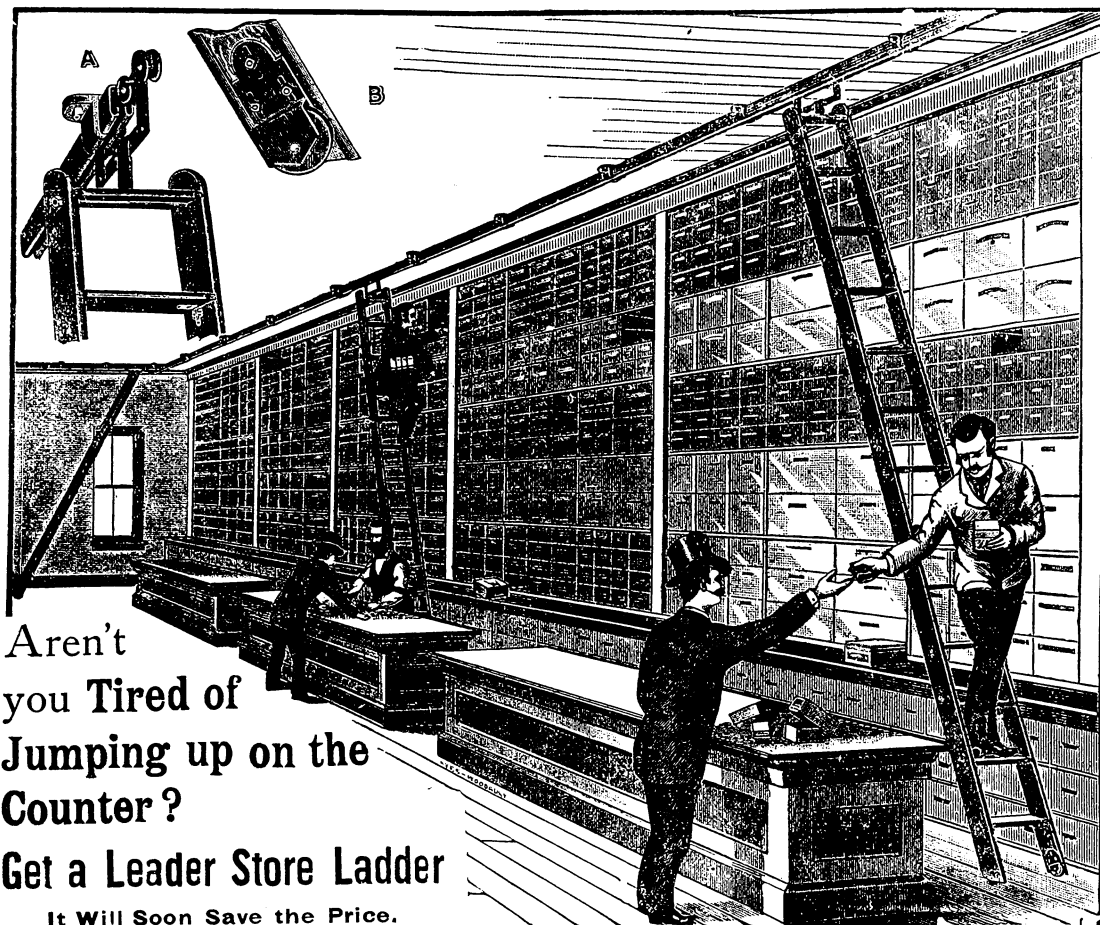
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Made of best selected Virginia White Cedar. Extra heavy hoops and castings, and the only machine with Galvanized Hoops, Castings and Trimmings.
Sides and Bottom Corrugated.
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RICHMOND CEDAR WORKS,
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THE TROLLEY LEADER STORE LADDER.

See Our Advertisement Next Week.



Parlor, Barn and Fire Door Hangers.

Aren't
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Jumping up on the
Counter?

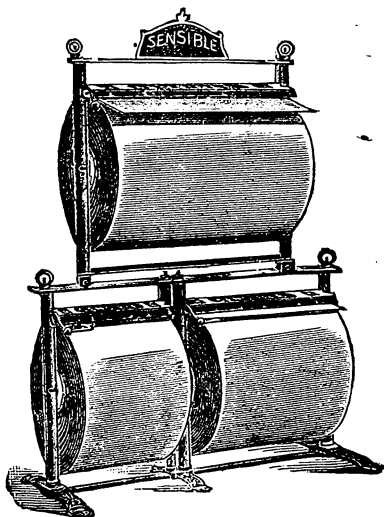
Get a Leader Store Ladder

It Will Soon Save the Price.

THE COBURN TROLLEY TRACK MFG. CO., - HOLYOKE, MASS.

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Manufacturers of SAD IRONS and HARDWARE.



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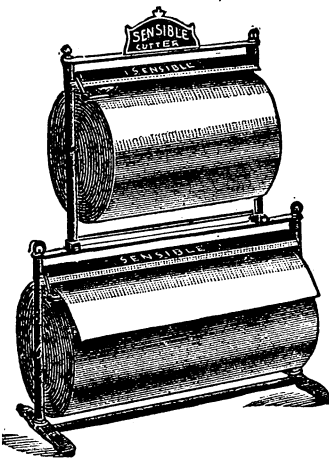
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No. 1 Sensible and Pioneer, same price. Are put up in any combination desired or in pyramids three high.

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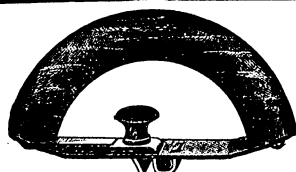
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General Office, Groton, N. Y. N. Y. Office, W. H. JACOBUS, 90 Chambers St.

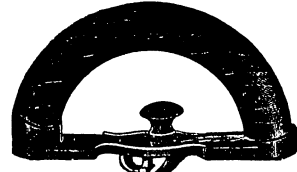
The Cleveland Wood Turning Co.,
710-726 Scranton Ave., Cleveland, O.



PATENT APPLIED FOR.
The Steel Stretcher Handle,
for Mrs. Potts' Sad Irons,
in Hazel Wood only.
No. 110.

Special work in Handles and Wood Turning of all kinds. Our line of regular made Tool Handles is the best.

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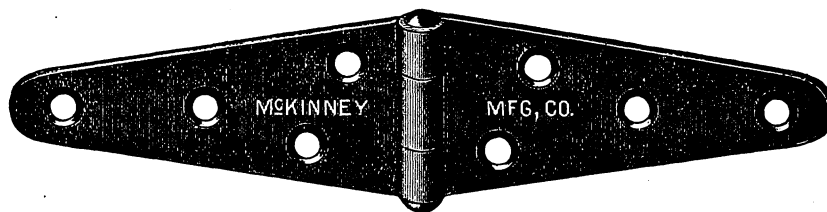
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Walnut, Tinned, No. 2.
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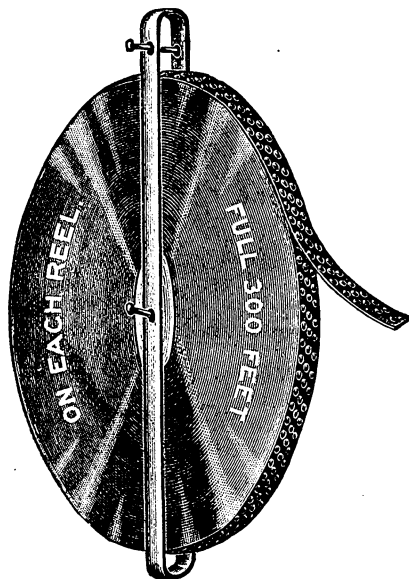
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ORDERS FILLED
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"NONE BETTER."



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Metal Strap coiled or in lengths from 4 to 12 feet. $\frac{1}{4}$ in., $\frac{3}{8}$ in. and $\frac{1}{2}$ in., and 1 inch wide of the toughest and best stock on the market.

Three Good Specialties for the
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SELF-DRAWING WIRE STRAP.



Patented December 13, 1887.

A flat wire strap that lies close to a box and makes a neat finish, having a split and spread hole every three inches, the nail being driven spreads open walls of said holes, contracting length of strap.

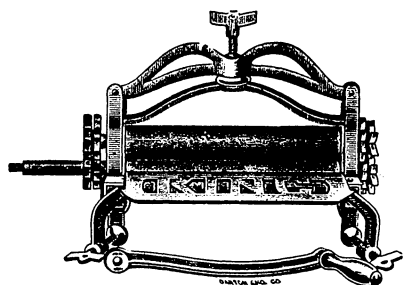
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Clutch Nail or Corner Iron, for protecting corners and sealing cases. For Holding them when they spring in the center by heavy packing. Also to be used where a nail will not hold, and numerous other places.

THE DEHAVEN MFG. CO.,

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**We are Sole Manufacturers of the
Celebrated Erie and King Wringers.**

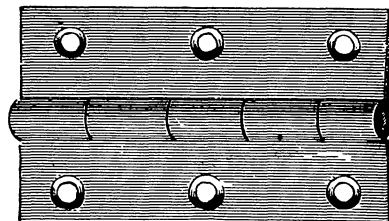
We also make all other brands of Wood and Iron
Frame Wringers.

Exclusive sale of the **ERIE** and **KING** Wringers
given to one dealer in each town.

Write for Catalogue.

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New York Office, 107 Chambers St., John T. Ryan, Mgr.



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Burton's Improved Acme Shaft Coupling.

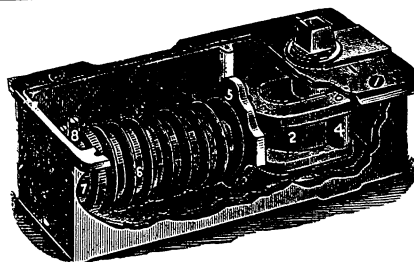
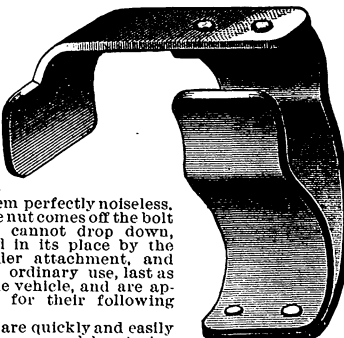
Patented Nov. 15, 1887.

A Perfect Anti-Rattler and Bolt Holder Combined.

In the Improved "Acme" Anti-Rattler we offer an article that effectually prevents any rattling in the coupling, rendering them perfectly noiseless. In case the nut comes off the bolt the thill cannot drop down, being held in its place by the Bolt Holder attachment, and will, with ordinary use, last as long as the vehicle, and are appreciated for their following merits:

1. They are quickly and easily inserted or removed, by placing in position and drive in or out with a hammer, not being necessary to remove the bolt or shaft.
2. Their shape is such that they are held firmly in place by spring tension.
3. Being made of two pieces solidly riveted together, they will not break as others made of one piece do.
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5. By their use much annoyance is avoided, and very often valuable time saved.

Ask your jobber for them or send to
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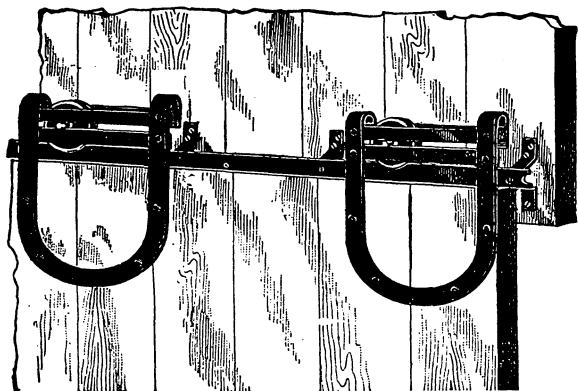
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Applied in floor under door. They close the door entirely, without noise or violence, and stop it at once at the center. Doors cannot sag, springs do not break or set. Send for new price-list.

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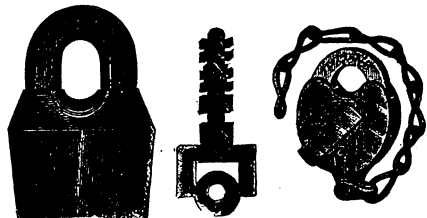
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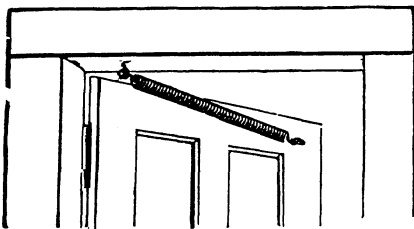
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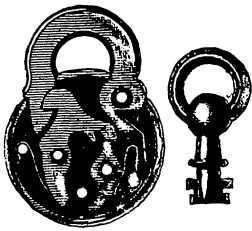
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Best Screen Door Spring made. Send for our list of references, comprising some of the first houses in the land. They sell readily, and that is what you are looking for. Drop us a postal.

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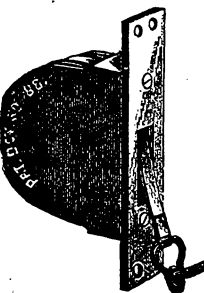
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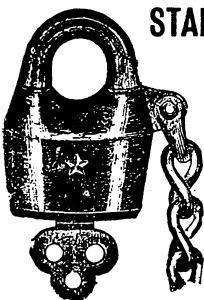
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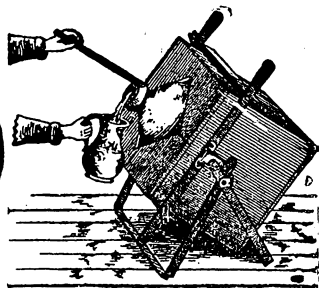
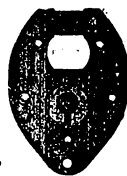
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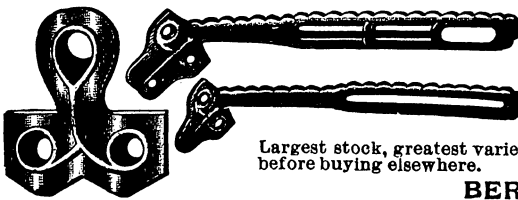
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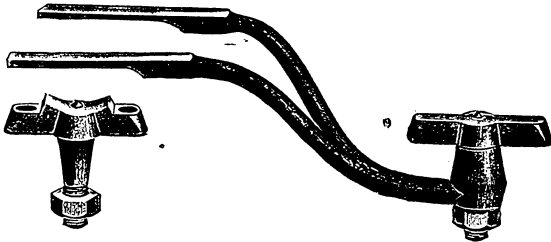
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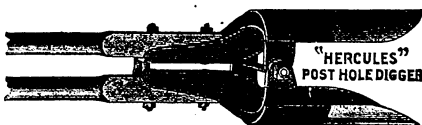
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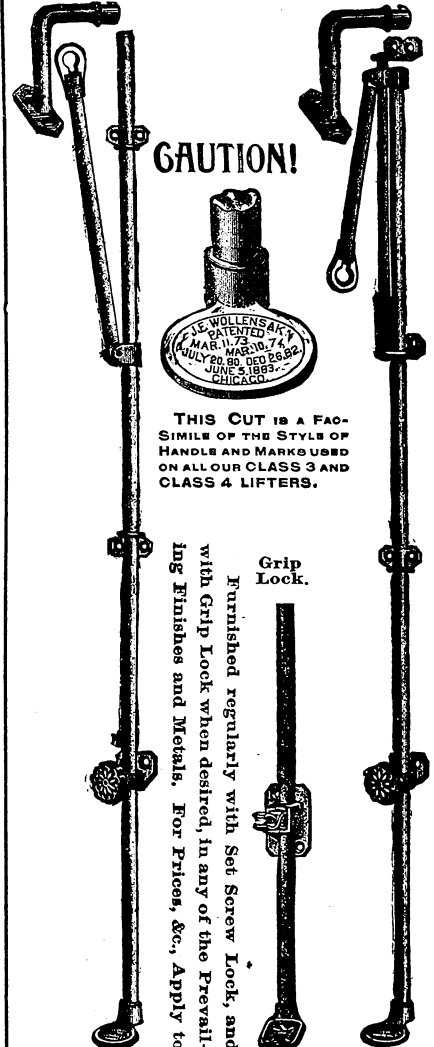
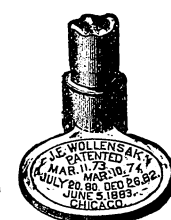
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Special Cob Breaking Device and peculiar dress of Grinders. Gives BETTER WORK, MORE OF IT, WITH LESS WORK TO TEAM than others. Send for catalogue of this and

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We also beg to say that we have introduced improved machinery into our new factory and have doubled our capacity, and are now prepared to furnish the best shoe, either iron or steel, ever offered to the trade.

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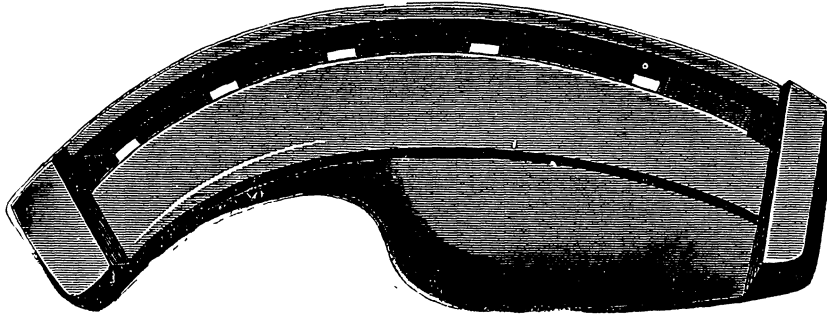
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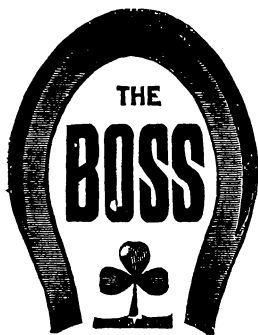
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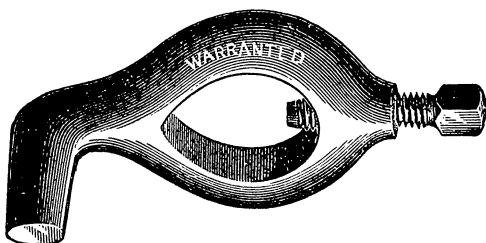
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5.....	1 3/4.....	70	17.....	4.....	2 10
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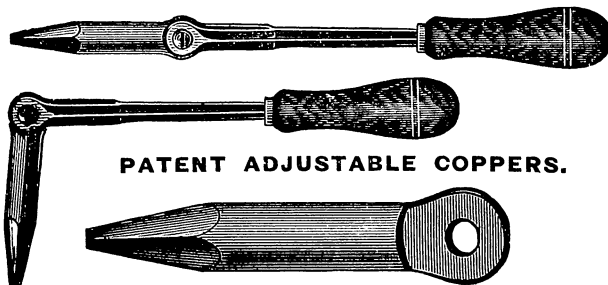
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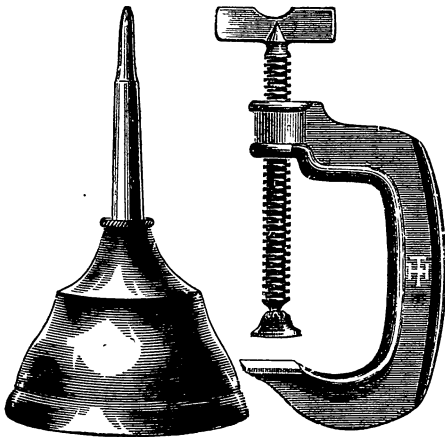
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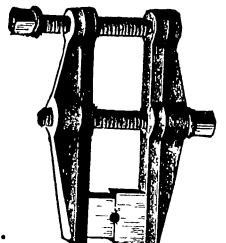
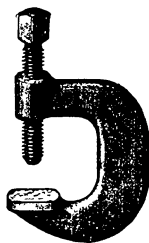
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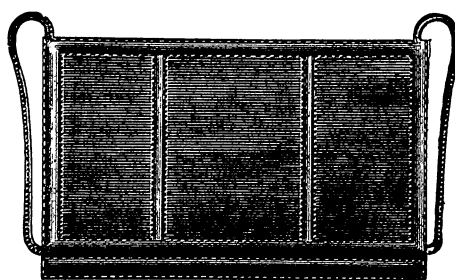
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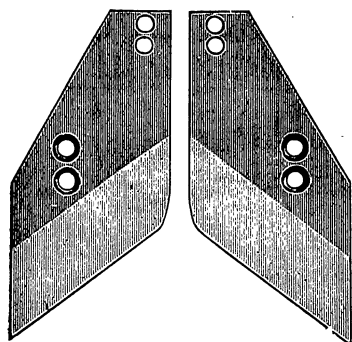
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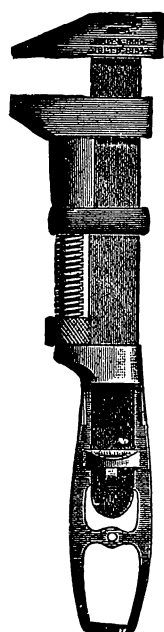
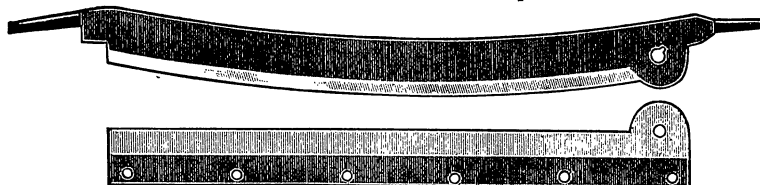
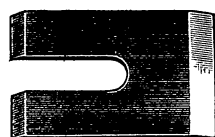


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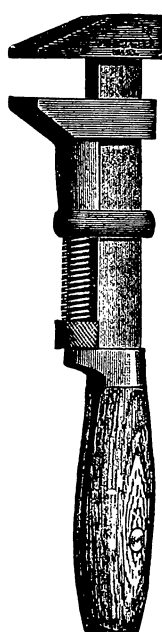
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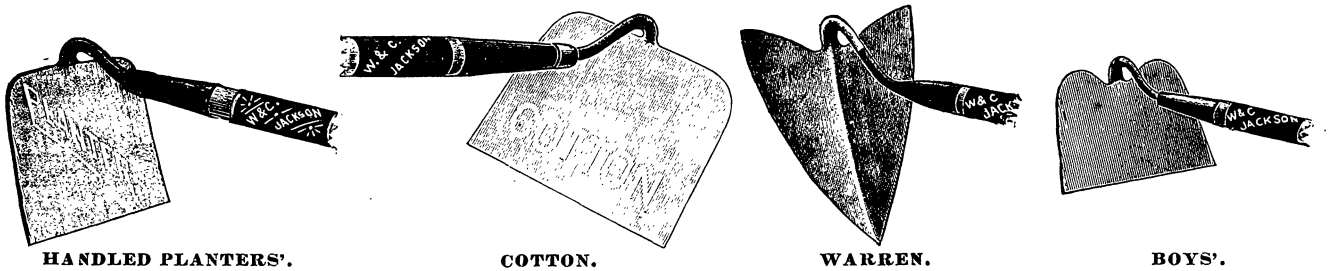
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FOR USE IN PRICE BOOKS.

Compiled by R. R. WILLIAMS, Hardware Editor of The Iron Age.

This pamphlet contains the principal standard Hardware price-lists in as clear and compact an arrangement as possible, so as to permit their being advantageously cut out and inserted in the price book. In order to make them adapted to this use they are printed on thin and tough paper of fine quality and on only one side of the paper.

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2	.35	.39	.48
3	.42	.47	.56
Quarts.			
2	.50	.56	.63
2½	.53	.59	.68
3	.55	.62	.73
4	.60	.68	.84
5	.65	.75	.96
6	.70	.81	1.11
7	.75	.84	1.21
Gallons.			
2	.85	.96	1.31
2½	1.05	1.18	1.56
3	1.20	1.35	1.70

The success of the effort to give the lists in small space is illustrated in many of the lists, in which a clear and condensed arrangement is secured. For instance, the wrench list occupies but 3 inches by ½ inch, while the list of Stove Hollow Ware, in very small space, gives the list prices on a large and important line of goods which often occupy several pages in catalogues. In several lists, such as Strap and T Hinges and Butts, a new arrangement is adopted, which is regarded as presenting these lists in a very convenient as well as condensed form.

As is obvious from the lists herewith reproduced, the shape and size of the different lists varies greatly, the aim being to give each list the smallest and most convenient arrangement possible. None of the lists are, however, more than 3½ x 6 inches in size, very few of them being as large as this and most of them very much smaller. In use it is intended that they shall be trimmed closely before they are inserted in price books, when they may be attached either by one edge close to the hinge of the book, as will, perhaps, be most convenient with the larger lists, permitting the use of the entire page for memoranda, or the smaller lists may be pasted on the page in connection with the entries in regard to discounts, freights, &c. Many of the lists are so compact in arrangement as when thus inserted to leave ample room for recording quotations.

Stove Hollow Ware.

Ground and Unground.

POTS, KETTLES, ETC. (CAST IRON.)						
No.	6	7	8	9	10	11
Pots.....	\$0.65	.75	.85	1.00	1.25	1.75
Kettles.....	.55	.65	.70	.85	1.00	1.40
T Kettles.....	.75	.80	.90	1.00	1.25	....
Spiders.....	.27	.30	.35	.40	.50	.60
Griddles Round	.22	.25	.27	.30	....	....
" Long..	.40	.50	.60	.75	....	....

SCOTCH AND YANKEE BOWLS.

No.	1	2	3	4	5	6
Scotch Bowls..	\$0.35	.40	.45	.50	.60	.70
Yankee Bowls.	.35	.45	.55	.65	.75	.90

Wrenches.

Standard List.

Inches.	6	8	10	12	15	18	21
Black...	\$9.00	\$10.00	\$12.00	\$14.00	\$24.00	\$30.00	\$36.00
Bright..	10.00	11.00	14.00	16.00	26.00	32.00	38.00

Glue Pots.

Tinned or Enamelled

No.	4/0....	\$4.50	No. 2	....	\$8.40
3/0....	5.00		3	....	10.26
2/0....	5.50		4	....	12.43
0	6.00		5	....	14.53
1	6.75		6	....	16.94

Some merchants use this pamphlet for reference, checking off invoices, etc., as it gives the leading lists in a more convenient form than they can otherwise be obtained. The lists are, however, intended primarily to be cut out

and inserted in price books, and can be used in connection with any of The Iron Age Hardware Price Books.

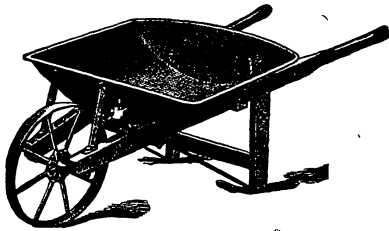
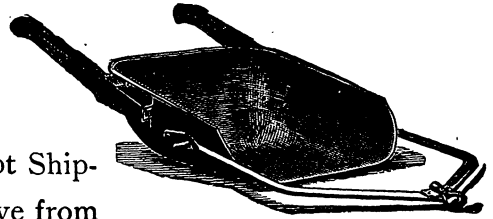
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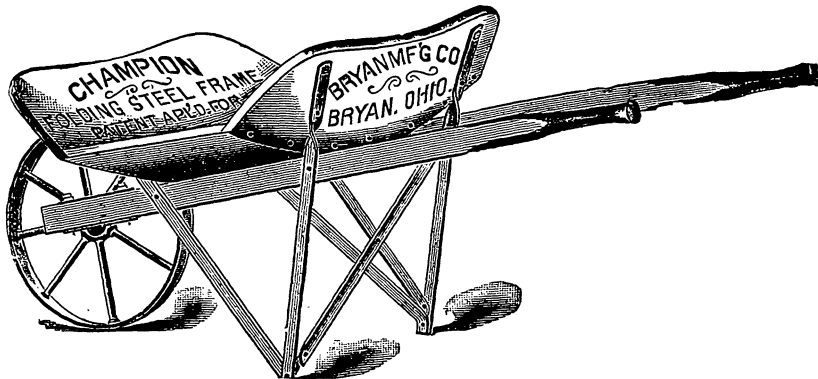


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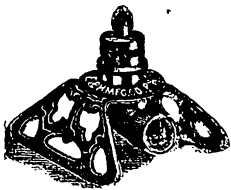
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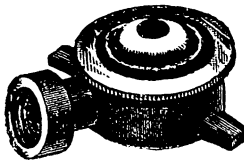


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Adjust.

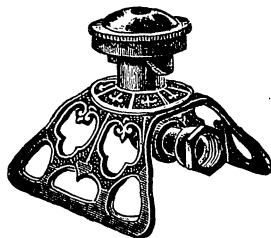
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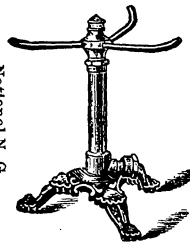


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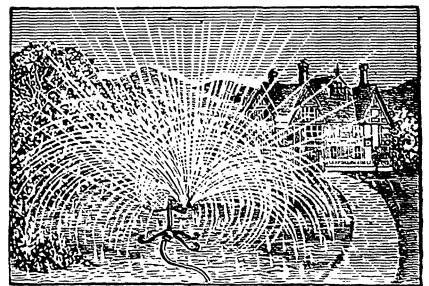
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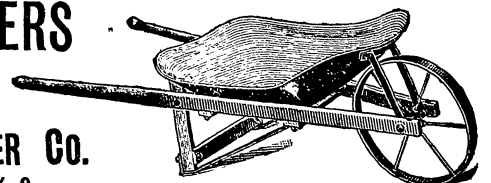
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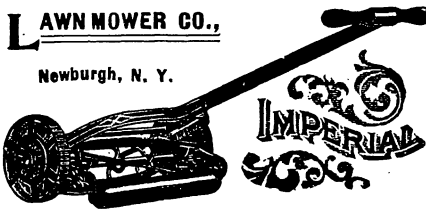


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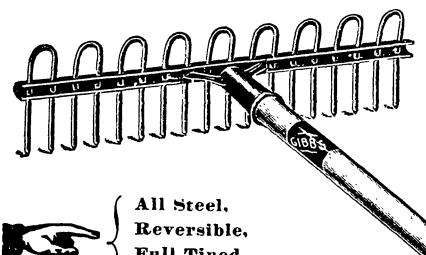


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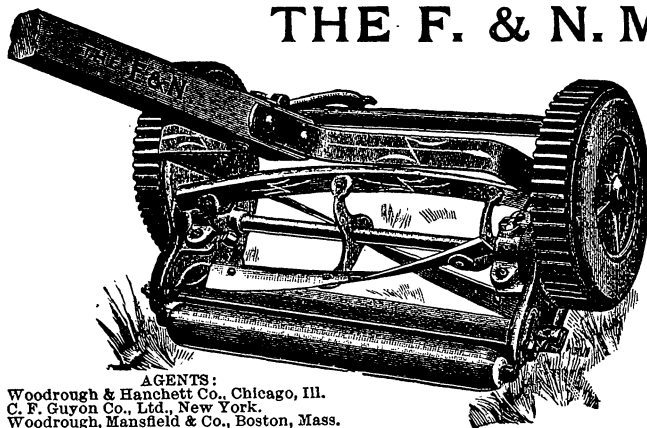
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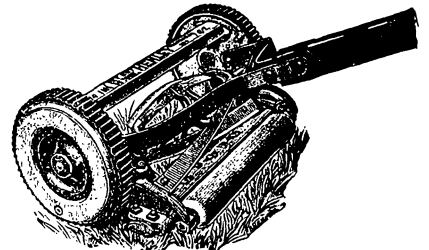
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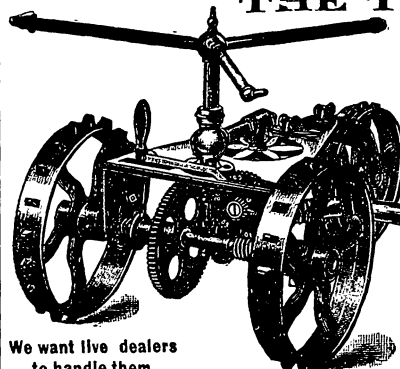
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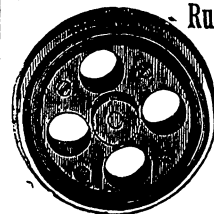
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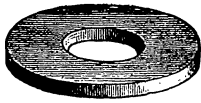
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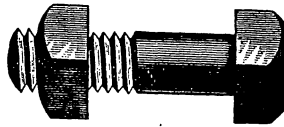
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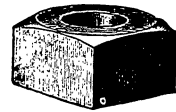
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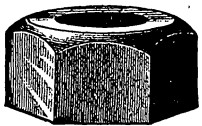
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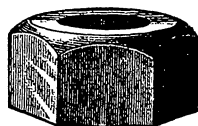
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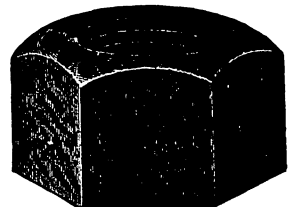
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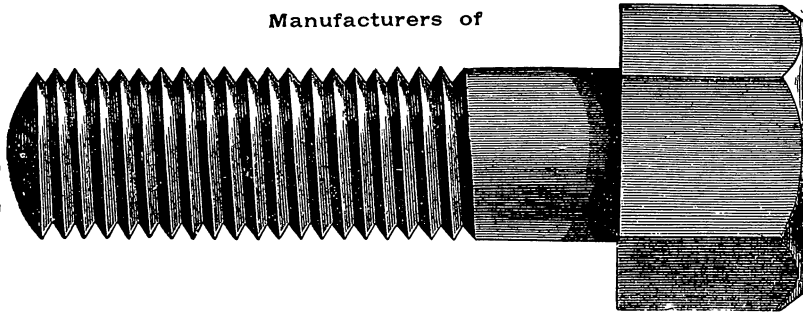
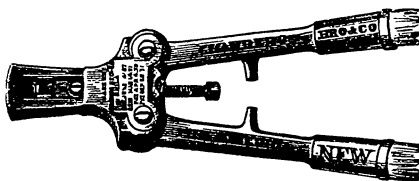
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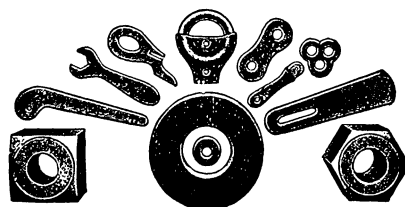
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Am. Specialty Co., Hartford, Conn.

Bellows, Manufacturers of.

Scott, Geo. M., Chicago, Ill.

Bells.

Bevin Bros. Mfg. Co., East Hampton.

Belt Dressing.

Jos. Dixon Crucible Co., Jersey City, N. J.

Belt Fasteners.

Bristol Co., Waterbury, Conn.
Claffen Mfg. Co., Cleveland, Ohio.
Talcott, W. O., Providence, R. I.

Belting, Makers of.

Alexander Bros., 412 N. 3d, Phila.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.
Main Belting Co., Philadelphia, Pa.
N. Y. Belting & Packing Co., Ltd., N. Y.
Roberts Mfg. Co., Pittsburgh, Pa.
Schultz Belting Co., St. Louis, Mo.

Bicycles and Bicycle Sundries.

Bevin Bros. Mfg. Co., E. Hampton, Mass.
Black Mfg. Co., Erie, Pa.
Bridgeport Gun Implement Co., 313-315 Broadway, New York.

Crawford Mfg. Co., Hagerstown, Md.
Eagle Bicycle Mfg. Co., Torrington, Ct.
Grand Rapids Cycle Co., Grand Rapids, Mich.

League Cycle Co., Hartford, Conn.
Lovell, Jno. P. Arms Co., Boston, Mass.
Pope Mfg. Co., Boston, Mass.
Stearns, E. C. & Co., Syracuse, N. Y.

Bit Braces.

Amidon Tool Corp., Buffalo, N. Y.

Blocks, Tackle, Makers of.

Cleveland Block Co., Cleveland, O.
Fulton Iron & Engine Works, Detroit, Mich.

Blowers.

Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant, B. F. & Co., Boston, Mass.

Boiler Plates.

Carbon Steel Co., Pittsburgh, Pa.
McIlvain, Wm. & Sons, Reading, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.

Pottstown Iron Co., Pottstown, Pa.

Boilers, Copper.

Randolph & Clowes, Waterbury, Conn.

Boilers, Steam.

Babcock & Wilcox Co., 30 Cortlandt.
Chandler & Taylor Co., Indianapolis, Ind.

Harrison Safety Boiler Wks., Phila., Pa.
Pollock, W. B. & Co., Youngstown, O.
Porter, H. K., Boston, Mass.

Southwark Fdy. & Mch. Co., Phila., Pa.
Sterling Co., Chicago, Ill.
Wetherill, Robt. & Co., Chester, Pa.

Bolt Cutters.

Chambers Bros. Co., Philadelphia.
Howard Iron Works, Buffalo, N. Y.
Wells Bros. & Co., Greenfield, Mass.

Books.

Republic Press, 14 Lafayette Place, N. Y.
Williams, David, 96-102 Reade, N. Y.

Box Banders.

Goodell, J. W., Burlington, Vt.

Box Straps and Corners.

De Haven Mfg. Co., Brooklyn, N. Y.

Boxes, Hdw. Shelf, &c.

Green, A. H., 22 Park Place, N. Y.
Jones, Jesse & Co., Philadelphia, Pa.

Brass, Manufacturers of.

Ansonia Brass & Copper Co., N. Y.
Davol, John & Sons, 100 John, N. Y.
Plume & Atwood Mfg. Co., N. Y.
Randolph & Clowes, Waterbury, Conn.
Rome Brass & Copper Co., Rome, N. Y.
Scovill Mfg. Co., Waterbury, Conn.
Waterbury Brass Co., 296 B'way, N. Y.

Brass Butt Hinges.

Tiebout, W. & J., 16 & 18 Chambers.

Brass Founders.

Cramp, Wm. & Sons S. & E. B. Co., Philadelphia, Pa.
Eynon-Evans Mfg. Co., Philadelphia, Pa.

Fraser, E. T., Lancaster, Pa.
Haight & Clark, Albany, N. Y.
Keys, W. W. & R. M. Co., Bridgeport, Conn.

North Bros. Mfg. Co., Phila., Pa.
Reeves, Paul S., Philadelphia.

Brass Goods.

Brass Goods Mfg. Co., 88 Chambers.

Bread and Cake Knives.

Cincinnati Mfg. Co., Cincinnati, O.
Claus Shear Co., Fremont, O.

Bridge Builders.

Berlin Iron Bridge Co., East Berlin, Ct.

Bronze (Tobin).

Ansonia Bronze & Copper Co., 19-21 Cliff Street, N. Y.

Brooms and Brushes.

Rice Mfg. Co., New Durham, N. H.

Builders' Hardware.

Deltz, A. E., 97 Chambers St., N. Y.
Reading Hdw. Co., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Burr Wheels.

Torrance Iron Co., Troy, N. Y.

Butchers' Steels.

Chatillon, John & Sons, 85-89 Cliff St., N. Y.

Butcher and Shoe Knives, Manufacturers of.

Chatillon, John & Sons, 85-89 Cliff St., N. Y.
Goodell Co., Antrim, N. H.
Wilson, John, Sheffield, England.

Butts and Hinges.

McKinney Mfg. Co., Allegheny, Pa.
Mann, Jas. & Sons, Buffalo, N. Y.
Sabin Machine Co., Montpelier, Vt.

Stanley Works, New Britain, Conn.
Tiebout, W. & J., 16 Chambers, N. Y.
Wrightsville Hdw. Co., Wrightsville, Pa.

Calipers and Dividers.

J. Stevens Arms and Tool Co., Chicopee Falls, Mass.
Starrett, L. S., Athol, Mass.

Car Axles.

Roberts, A. & P. & Co., Phila.

Carboy Stands.

Wolf, W. & L., Philadelphia, Pa.

Carriage Hardware, Makers of.

Clapp, E. D. Mfg. Co., Auburn, N. Y.
Covert's Saddlery Works, Farmer, N. Y.
Eccles, Richard, Auburn, N. Y.
McKinnon Dash & Hdw. Co., Ltd., Buffalo, N. Y.

Scranton Forging Co., Scranton, Pa.

Smith, H. D. & Co., Plantsville, Conn.

Cartridge Reloading Tools.

Ideal Mfg. Co., New Haven, Conn.

Carvers' Tools.

White, Van Glahn & Co., 15-17 Chat-ham Square, N. Y.

Casters, Wheel, &c.

Clark G. P., Windsor Locks, Conn.

Castings Cleaning Apparatus.

Tilghmans Patent Sand Blast Co., Ltd., Sheffield, England.

Castings, Iron and Steel.

Allentown Hdw. Wks. Allentown, Pa.
Booth, The Lloyd Co., Youngstown, O.
Boston Casting Co., So. Boston, Mass.

The Burr & Houston Co., Brooklyn, N. Y.
Cheney, S. & Son., Manlius, N. Y.
Chester Steel Casting Co., Phila.

Chrome Steel Works, Brooklyn, N. Y.
Eureka Cast Steel Co., Chester, Pa.
Flagg, Stanley G. & Co., Phila.

Garland Foundry Co., Cleveland, O.
Haight & Clark, Albany, N. Y.
King & Andrews Co., Chicago, Ill.

Palmer & De Mooy Fdry. Co., Cleveland, O.
Pratt & Cady Co., Hartford, Conn.

Sessions Foundry Co., Bristol, Conn.
Spencer's I. S. Sons, Guilford, Conn.
Standard Fdy. & Mfg. Co., Cleveland, O.

Torrance Iron Co., Troy, N. Y.
Walker Mfg. Co., Cleveland, Ohio.
Wetherill, Robert & Co., Chester, Pa.

Castings, Malleable.

Arcade Malleable Iron Co., Worcester, Mass.
Hammer & Co., Branford, Conn.
Torrance Iron Co., Troy, N. Y.

Catalogue Files.

Folding Paper Box Co., So. Bend, Ind.

Chains.

Bradlee & Co., Philadelphia.
Garland Chain Co., Rankin, Pa.
Link Belt Engineering Co., Phila., Pa.

McKay, Jas. & Co., Pittsburgh, Pa.

Chimneys.

Phila. Engineering Works, Phila., Pa.

Chisels, Manufacturers of.

Buck Bros., Milbury, Mass.
Buck, Chas., Milbury, Mass.
White, L. & I. J. Co., Buffalo, N. Y.

Chucks.

Cushman Chuck Co., Hartford, Conn.
Hoggson & rettis Mfg. Co., New Haven, Conn.

Skinner Chuck Co., New Britain, Conn.
Smith & Edge Mfg. Co., Bridgeport, Conn.

Union Mfg. Co., 103 Chambers, N. Y.
Whitton, D. E. Mach. Co., New London, Conn.

Clamps.

Hammer & Co., Branford, Conn.
Le Count, C. W., So. Norwalk, Conn.

Coal.

Barns, C. K. & Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Coffee Mills.

Enterprise Mfg. Co., Phila., Pa.
Parker, Chas. Co., Meriden, Conn.

Coke.

Barns, C. K. & Co., Philadelphia, Pa.
Houston, C. B. & Co., Philadelphia, Pa.
Rainey, W. J., Cleveland, O.

Wister, Francis, Philadelphia, Pa.

Collections.

Hardware Board of Trade (Limited), 4 and 6 Warren, N. Y.

Condensers.

Worthington, Henry R., 86 & 88 Liberty Street, N. Y.

Conveying Machinery.

Brown Hoisting & Conveying Machine Co., Cleveland, Ohio.
Jeffrey Mfg. Co., Columbus, O.

Link-Belt Engineering Co., Phila., Pa.

Copper.

Ames Sword Co., Chicopee, Mass.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.

Hendricks Bros., 49 Cliff, N. Y.
New Haven Copper Co., 294 Pearl, N. Y.
Randolph & Clowes, Waterbury, Conn.

Rome Brass & Copper Co., Rome, N. Y.
Wister, Francis, Philadelphia, Pa.

Cordage.

Samson Cordage Works, Boston, Mass.

Cork Screws.

Williamson, C. T. Wire Novelty Co., Newark, N. J.

Corrugated Furnaces.

Continued Iron Wks., Brooklyn, N. Y.

Corrugated Iron.

Cincinnati Corrugating Co., Piqua, O.
Cambridge Roofing Co., Cambridge.

Jersey City Galvanizing Co., 112 John St., N. Y.
Mosley Iron Bridge & Roof Co., 6 Day, N. Y.

N. Y. Iron Roofing & Corrugating Co., Jersey City, N. J.

Counting Machines.

Durant, W. N., Milwaukee, Wis.

Cranes.

Halsey, W. S. & Co., Birdsboro, Pa.
Maris & Beskey, Philadelphia, Pa.

Ridgway, Craig & Sons, Coatesville, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.

Whiting Foundry Equipment Co., Chicago, Ill.
Yale & Towne Mfg. Co., Stamford, Conn.

Cupolas, Hot Blast.

Byram & Co., Detroit, Mich.
Whiting Foundry Equipment Co., Chicago, Ill.

Cutlery, Importers of.

Sickles, Sweet & Lyon, 35 Barclay, N. Y.

Cutlery, Manufacturers of.

Hingham, W. Co., Cleveland, Ohio.
Dame, Stoddard & Kendall, Boston, Mass.

Goodell Co., Antrim, N. H.
Northampton Cutlery Co., Northampton, Mass.

Pauls Bros., 88 Chambers St., N. Y.
Wilson, John, Sheffield, England.

Cutlery Display Cases.

Union Show Case Co., Chicago, Ill.

Cyclometers.

Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.

Dampers.

Arcade Mfg. Co., Freeport, Ill.

Dashes and Fenders.

McKinnon Dash & Hdw. Co., Ltd., Buffalo, N. Y.

Dies.

Wilson, J. Fred, Worcester, Mass.

Die Forgings and Castings.

Bliss, E. W. Co., Brooklyn, N. Y.

Door Checks and Springs.

Bardsley, J., 149 & 151 Baxter St., N. Y.

Door Springs.

Colled Wire Belting Co., Jersey City, N. J.

Drilling Machines.

Beaman & Smith, Providence, R. I.
Bickford Drill & Tool Co., Cin., Ohio.

Buff

Egg Beaters.

North Bros. Mfg. Co., Philadelphia, Pa.

Electric Bells and Supplies.

Ostrander, W. R. & Co., 204 Fulton St., New York.
Wollensak, J. F., Chicago, Ill.

Elevators, Makers of.

Link-Belt Engineering Co., Phila., Pa.
Morse, Williams & Co., Phila., Pa.
Penna. Elevator Engineering Co., Phila., Pa.

Emery and Emery Wheels.

Diamond Mach. Co., Providence, R. I.
N. Y. Belting & Packing Co., Ltd., N. Y.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Sterling Emery Wheel Co., 174 Fulton St., N. Y.
Tanite Co., Stroudsburg, Pa.

Emery Wheel Dressers.

Bay State Stamping Co., Worcester, Mass.

Engineers and Contractors.

Aiken, Henry, Pittsburgh, Pa.
Berrick, J. A., 284 Pearl St., N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa.
Lean, D. R., Co., Pittsburgh, Pa.
McClure, Amsler & Co., Pittsburgh, Pa.
Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.
Smythe, S. B. Co., Incorporated, Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.

Engines, Gas and Gasoline.

Buckeye Mfg. Co., Union City, Ind.
Otto Gas Engine Works, Phila., Pa.
Springfield Gas Engine Co., Springfield, Ohio.

Engines, Steam, Makers of.

Allis, E. P. Co., Milwaukee, Wis.
Bass Foundry & Machine Works, Ft. Wayne, Ind.
Harris, Wm. A., Steam Engine Co., Providence, R. I.
Norwalk Iron Works Co., So. Norwalk, Conn.
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
Phila. Engineering Works, Phila., Pa.
Southwark Foundry & Machine Co., Phila., Pa.
Tod, William & Co., Youngstown, O.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Wetherill, Robt. & Co., Chester, Pa.

Exhaust Tumblers.

Sweetser, W. A., Brockton, Mass.

Expansion Bolts.

Boone, W. C. Mfg. Co., Boonton, N. J.
Church, Isaac, Toledo, O.
Steward & Romaine Mfg. Co., Phila., Pa.

Exporters.

Flint & Co., 68 Broad St., N. Y.

Faucets, Self-Measuring.

Lane Bros., Poughkeepsie, N. Y.

Faucets, Wooden, Makers of.

John Sommer's Son, Newark, N. J.

Feed-Water Heaters and Purifiers.

Davis, I. B. & Son, Hartford, Conn.
Harrison Safety Boiler Works, Phila., Pa.
National Pipe Bending Co., New Haven, Conn.
Taunton Locomotive Mfg. Co., Taunton, Mass.
Webster, Warren & Co., Camden, N. J.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.

Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Chess Bros., Pittsburgh, Pa.
Clinton Wire Cloth Co., Clinton, Mass.
Gilbert & Bennett Mfg. Co., 42 Cliff St.
Kilmer Mfg. Co., Newburgh, N. Y.
Randall Fence Co., Le Roy, N. Y.
The Van Dorn Iron Works Co., Cleveland, O.

Files, Importers of.

Moss, F. W., 80 John St., N. Y.

Files and Rasps, Manufacturers of.

Arcade File Works, Anderson, Ind.
Banker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond, Phila.
McCauffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.

Fire Brick, Makers of.

Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer, B. & Sons, foot E. Houston St., N. Y.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Valentine, M. D. & Bro. Co., Woodbridge.

Fire Doors.

Berlin Iron Bridge Co., E. Berlin, Conn.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.

Fishing Tackle.

Dame, Stoddard & Kendall, Boston, Mass.

Flint and Emery Paper.

Baeder, Adamson & Co., Phila., Pa.

Flour Sifters.

Bromwell Brush & Wire Goods Co., Cincinnati, Ohio.

Fodder Cutters.

Silver Mfg. Co., Salem, O.

Forges, Portable, &c.

Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Foss Mfg. Co., Springfield, Ohio.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel.

Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel-Cambria Iron Co., Johnstown, Pa.
Frankford Steel Co., Phila., Pa.
Scranton Forging Co., Scranton, Pa.
U. S. Projectile Co., Brooklyn, N. Y.

Forks, Hay and Manure.

Iowa Farming Tool Co., Ft. Madison, Iowa.

Foundry Facings.

Dixon, Jos., Crucible Co., Jersey City, N. J.
S. Obermayer Co., Cincinnati, O.
Smith's Pattern Works, Akron, Ohio.

Foundry Riddles.

Estey, W. S., 65 Fulton, N. Y.

Foundry Supplies.

Diamond Clamp & Flask Co., Richmond, Ind.
S. Obermayer Co., Cincinnati, O.
Rice Mfg. Co., New Durham, N. H.
Smith, J. D., Fdy. Supply Co., Cinn., O.

Friction Clutches.

Brown, A. & F., 17 Dey St., N. Y.
Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.

Friction Cone.

Evans Friction Cone Co., Boston, Mass.

Furnaces, Foundry.

Byram & Co., Detroit, Mich.

Galvanized Material.

Jersey City Galvanizing Co., 112 John St., N. Y.

Gas Producers.

Wood, R. D. & Co., Philadelphia, Pa.

Gas & Steam Fitters' Supplies.

Pancoast, Henry B. & Co., Phila., Pa.

Gate Hinges.

Wrightsville Hdw. Co., Wrightsville, Pa.

Gear Cutters.

D. E. Whiton Mach. Co., New London, Conn.

Gears.

Boston Gear Works, Boston, Mass.
Lincoln Iron Works, Rutland, Vt.
Poole, Robt. & Son Co., Baltimore, Md.
U. S. Projectile Co., Brooklyn, N. Y.

Glass Boards.

Canton Saw Co., Canton, O.

Glass Cutters.

Monce, S. G., Bristol, Conn.

Glue.

Baeder, Adamson & Co., Phila., Pa.
Dodd, A. W. & Co., Gloucester, Mass.
Russell Cement Co., Gloucester, Mass.

Glue Pots.

Stuart & Peterson Co., Phila., Pa.

Grass Catchers.

Supplee Hardware Co., Phila., Pa.

Grate Guards.

Dow Wire Works Co., Louisville, Ky.

Grinding Mills.

Foss Mfg. Co., Springfield, O.

Grinding and Polishing Machines.

Diamond Mach. Co., Providence, R. I.
Norton Emery Wheel Co., Worcester, Mass.

Grindstone Dressing Machinery.

Blake & Johnson, Waterbury, Conn.

Grindstones.

Cleveland Stove Co., Cleveland, O.

Gunpowder, Makers of.

Lafin & Rand Powder Co., 29 Murray St., N. Y.

Handles.

Cleveland Wood Turning Co., Cleveland, O.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros., Poughkeepsie, N. Y.

Hardware Comm'n Merchants.

Graham, John H. & Co., 111 Chambers St., New York.

Hardware Jobbers.

White, Van Giahn & Co., 15-17 Chatham Square, N. Y.

Hardware Manufacturers.

Stearns, E. C. & Co., Syracuse, N. Y.
Streeter, N. R. & Co., Groton, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn.

Hardware Mfrs. Agents.

Bingham, W. Co., Cleveland, O.
Clarke, Thomas, St. John, N. B.
Graham, John H. & Co., 113 Chambers
Sickles, Sweet & Lyon, 35 Barclay, N. Y.

Hardware Specialties.

Acme Shear Co., Bridgeport, Conn.
Burger Bros., Philadelphia, Pa.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Johnson, S. C., Racine, Wis.
North Bros. Mfg. Co., Philadelphia, Pa.
Ransom Hdw. Co., Burlington, Vt.
Scranton & Co., New Haven, Conn.
Wilson, J. Fred., Worcester, Mass.
Wrightsville Hdw. Co., Wrightsville, Pa.

Harness Snaps.

Covert Mfg. Co., West Troy, N. Y.
Coverts' Saddlery Wks., Farmer, N. Y.
Fitch, W. & E. T., New Haven, Conn.

Hoes.

Withington & Cooley Mfg. Co., Jackson, Mich.

Hog Rings and Ringers.

Oakes & Irwin, Decatur, Ill.

Hoisting Machines.

Box, Alfred & Co., 314 Green, Phila.
Brown Hoisting & Conveying Mch. Co., Cleveland, Ohio.
Byers, Jno. F. Mch. Co., Ravenna, O.
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E. Son & Co., Phila.
Harris Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
Lincoln Iron Works, Rutland, Vt.
McCoy, Jos. F. & Co., 28 Warren St.
Maris & Beekley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis.
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Seidel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Hollow Ware.

Avery Stamping Co., Cleveland, O.
Benson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
Stuart & Peterson Co., Phila., Pa.

Horse Nails, Makers of.

Capewell Horse Nail Co., Hartford, Conn.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.

Horse and Mule Shoes, Makers of.

Byrdon Horse Shoe Co., Catsasauqua, Pa.
Barnes Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Diamond State Iron Co., Wilmington, Del.
Leonard, J., 446 West St., N. Y.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phoenix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Shoenberger & Co., Pittsburgh, Pa.
Standard Horse Shoe Co., Boston, Mass.

Hose Menders.

Hudson, C. E. & Co., Leominster, Mass.

Hose.

Cleveland Rubber Works, Cleveland, O.
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.

Hydrants, &c.

McLean, John, 296 & 298 Monroe, N. Y.

Hydraulic Forging.

U. S. Projectile Co., Brooklyn, N. Y.

Hydraulic Jacks.

Dudgeon, Richard, 24 Columbia, N. Y.
McCoy, Jos. F. Co., 28 Warren St., N. Y.

Ice Cream Freezers.

White Mountain Freezer Co., Nashua, N. H.

Injectors.

Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., New York.

Insurance, Boiler.

Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.

Iron and Steel, Swedish.

Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y.

Iron Commission Brokers.

Butze, Adolph, St. Louis, Mo.
Corning, Edw. & Co., 29 B'way, N. Y.
Cox, Justice, J., Philadelphia.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia, Pa.
Hoffman, J. W. & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J., 430 Walnut, Philadelphia.
Phillips & Gray, Philadelphia, Pa.
Wister, L. & R. & Co., Phila., Pa.

Iron Ore.

Samuel, Frank, Philadelphia, Pa.

Iron, Merchants.

Barns, C. K. & Co., Philadelphia, Pa.
Borden & Lovell, 70 West, N. Y.
Bussienius & Cumliffe, Philadelphia.
Corning, Edw. & Co., 29 B'way, N. Y.
Cox, Justice, J., Philadelphia.
Cotton, Barclay W. & Co., Phila.
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 577 to 583 Greenwich St., N. Y.
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., 66 B'way, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Iron, Importers.

Abbott, Wheelock & Co., N. Y. and Boston.
Lundberg, Gustaf, Boston, Mass.

Iron, Sheet, Manufacturers of.

Cambridge Iron & Steel Co., Cambridge, Ohio.
W. Dewees Wood Co., Lima, McKeesport, Pa.

Ironwork, Ornamental.

Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
The Van Dorn Iron Works Co., Cleveland, O.

Keys.

Wollensak, J. F., Chicago, Ill.

Ladies.

Whiting Fdy. Equipment Co., Chicago, Ill.

Lamps.

Standard Lighting Co., Cleveland, O.

Lanterns.

Rochester Lamp Co., 42 Park Place, New York.
Steam Gauge & Lantern Co., Syracuse, N. Y.

Lathes.

Beaman & Smith, Providence, R. I.
Dietz, Schumacher & Co., Cincinnati, O.
Draper Machine Tool Co., Worcester, Mass.
Harrington, E. Son & Co., Phila., Pa.
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.
New Haven Mfg. Co., New Haven, Conn.
Sebastian Lathe Co., Cincinnati, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Lathing, Expanded Metal.

Chess Bros., Pittsburgh, Pa.

Lathing, Wire.

Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Lawn Mowers.

Blair Mfg. Co., Springfield, Mass.
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.
Coldwell Lawn Mower Co., Newburg, N. Y.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Supplee Hdw. Co., Phila., Pa.

Lawn Rakes.

Gibbs Mfg. Co., Canton, Ohio.
Kohler, F. E. & Co., Canton, O.

Lawn Sprinklers.

Blair Mfg. Co., Springfield, Mass.
Ette & Henger Mfg. Co., St. Louis, Mo.
Graham, John H. & Co., 113 Chambers Street, N. Y.
McGowan, John H. Co., Cincinnati, O.
Portland Lawn Sprinkler Co., Portland, Me.

Letters and Figures, Metallic.

White, A. A. & Co., Providence, R. I.

Letters, Paper.

Tablet & Ticket Co., Chicago, Ill.

Levels.

Richardson, C. F. & Son, Athol, Mass.

Locks and Knobs, Manufacturers of.

Deitz, A. E., 97 Chambers, N. Y.
Reading Hdw. Co., Reading, Pa.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Yale & Towne Mfg. Co., Stamford, Conn.

Lubricants.

Dixon, Jos., Crucible Co., Jersey City, N. J.

Machinery.

Am. Tool Works, Cleveland, Ohio.
Ayer, H. C. & Gleason Co., Phila., Pa.
Barnes, W. F. & John, Rockford, Ill.
Beaman & Smith, Providence, R. I.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N. Y.
Bisnall & Kiley Mfg. Co., St. Louis.
Bliss, E. W. Co., Brooklyn, N. Y.
Bridgeport Mch. Tool Works, Bridgeport, Conn.
Briggs, Marvin, 12 Broadway, N. Y.
Carlin's Sons, Thos., Allegheny, Pa.
Clapp, Geo. M., agt., 74 Cortlandt, N. Y.
Detrick & Harvey Mch. Co., Baltimore, Md.
Dietz, Schumacher & Co., Cincinnati, Ohio.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co., Light & Canal Sts.
Gould & Eberhardt, Newark, N. J.
Hamilton Mch. Tool Co., Hamilton, O.
Harrington, E. Son & Co., Phila., Pa.
Henderer, A. L., Wilmington, Del.
Hendey Machine Co., Torrington, Ct.
Hill, Clarke & Co., Boston, Mass.
Howard & Morse, 45 Fulton St., N. Y.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield, Vt.
Lodge & Davis Mch. Tool Co., Cincinnati, O.
Lodge & Shipley Mch. Tool Co., Cincinnati, O.
McCabe, J. J., 68 Cortlandt, N. Y.
Mechanists' Supply Co., Rochester, N. Y.
Manville, E. J., Mch. Co., Waterbury, Conn.
Newark Mch. Tool Wks., Newark, N. J.
New Haven Mfg. Co., New Haven, Ct.
New York Machinery Depot, 178 Broadway, New York.
Niles Tool Wks., 138 Liberty St., N. Y.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Place, Geo., 145 Broadway, N. Y.
 Poole, Robt. & Son Co., Baltimore, Md.
 Powell Planer Co., Worcester, Mass.
 Prentiss Tool & Supply Co., N. Y.
 Scranton Supply & Mchry. Co., Scranton, Pa.
 Selbert, J. M., Philadelphia, Pa.
 Sellers, Wm. & Co., Phila.
 Seyfert's Sons, L. F., Philadelphia, Pa.
 Seymour Tool Co., Hartford, Conn.
 Steptoe, J. & Co., Cincinnati, O.
 Stow Flexible Shaft Co., Ltd., Phila.
 Toomey, Frank, Philadelphia, Pa.
 Walker Mfg. Co., Cleveland, O.
 Wetherill, Robert & Co., Chester, Pa.
 Wilson, W. A., Rochester, N. Y.

Machinery for Hardware Manufacturers.
 Adt, Jno. & Son, New Haven, Conn.

Machine Knives.
 Loring, Coes & Co., Worcester, Mass.
 Loyd, John, 558-562 Water St., N. Y.
 Simonds Mfg. Co., Fitchburg, Mass.

Machine Screws.
 Rubbell, Harvey, Bridgeport, Ct.
 Rhode Island Tool Co., Providence, R. I.

Machine Tools.—See Machinery.

Machine Work.
 Papping, J., 58th St. & 11th Ave., N. Y. City.

Machinists' Scales.
 Coffin & Leighton, Syracuse, N. Y.
 Starrett, L. S., Athol, Mass.

Machinists' Tools and Supplies.
 King, J. M. & Co., Waterford, N. Y.
 Sellers, Wm. & Co., Inc., Phila.

Measuring Tapes.
 Keuffel & Esser Co., N. Y.

Meat Choppers.
 Enterprise Mfg. Co., Philadelphia, Pa.

Meat Cutters.
 North Bros. Mfg. Co., Philadelphia, Pa.

Mechanical Instruction.
 Correspondence School of Mechanics, Scranton, Pa.

Merry-go-round.
 Clark, W. J. & Co., Salem, Ohio.

Metals.
 Fearing, Wm. S., 100 Chambers, N. Y.
 Hendricks Bros., 49 Cliff, N. Y.

Metal Brokers.
 American Metal Co., N. Y.

Metallurgists.
 Britton, J. Blodgett, Phila., Pa.

Mining Knives.
 Palmer Hdw. Mfg. Co., Troy, N. Y.

Mine Lamps.
 Darby, Edw. & Sons, Phila., Pa.
 Leonard, B. E., Scranton, Pa.

Mining Screens.
 Harrington & King Perforating Co., Chicago, Ill.
 Howard & Morse, 45 Fulton, N. Y.

Mining Machinery.
 Allis, E. P. Co., Milwaukee, Wis.

Models, Makers of.
 Franklin, H. H. Mfg. Co., Syracuse, N. Y.
 Ideal Machine Works, Hartford, Conn.

Molding Sand.
 Obermayer, S. Co., Cincinnati, O.

Money Drawers.
 Columbian Novelty Co., North East, Penna.

Motors, Water and Electric.
 Boigiano Mfg. Co., Baltimore, Md.
 C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
 Dallett, Thomas H. & Co., Phila., Pa.

Nail Machinery.
 Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nail and Tack Pullers.
 Am. Specialty Co., Hartford, Conn.
 Scranton & Co., New Haven, Conn.

Nails (Cut) and Spikes.
 Borden & Lovell, 70 West, N. Y.
 Pottstown Iron Co., Pottstown, Pa.
 Riverside Iron Wks., Wheeling, W. Va.
 Valley Steel Co., St. Louis, Mo.

Nickel Plated Supplies.
 Eddy Electric Mfg. Co., Windsor, Conn.

Nickel Plating.
 Rhodes, L. E. Co., Hartford, Conn.

Norway Shapes, Rollers of.
 Rowland, William & Harvey, Frankford, Philadelphia.

Novelty Manufacturers.
 Franklin, H. H. Mfg., Syracuse, N. Y.
 Ideal Machine Works, Hartford, Conn.

Nut Machines.
 Dunham Nut Co., Unionville, Ct.

Nuts, Bolts, &c., Makers of.
 American Bolt Co., Lowell, Mass.
 American Screw Co., Providence, R. I.
 Blake & Johnson, Waterbury, Conn.
 Dunham Nut Co., Unionville, Conn.
 Haskell, Wm. H. Co., Pawtucket, R. I.
 Mt. Carmel Bolt Co., Mt. Carmel, Conn.
 Pennsylvania Bolt & Nut Co., Lebanon, Pa.
 Port Chester Bolt & Nut Co., Port Chester, N. Y.
 Rhode Island Tool Co., Providence, R. I.
 Russell, Burdall & Ward, Port Chester, N. Y.
 Sternbergh, J. H. & Son, Reading, Pa.
 Wilson, J. Fred., Worcester, Mass.
 Wm. H. Haskell Co., Pawtucket, R. I.

Oilers.
 Wilnot & Hobbs Mfg. Co., Bridgeport, Conn.

Oil Stones.
 Pike Mfg. Co., Pike Station, N. H.

Ores.
 Wister, Francis, Philadelphia, Pa.

Ox Shoes.
 Millers Falls Co., 93 Reade St., N. Y.
 Scranton Forging Co., Scranton, Pa.

Packing.
 Morrison, Robert, St. Louis, Mo.
 N. Y. Belting & Packing Co., Ltd., N. Y.

Padlocks.
 Ames Sword Co., Chicopee, Mass.
 Fraim, E. T., Lancaster, Pa.
 Wolf, W. & L., Phila., Pa.

P. ile.
 Richmond Cedar Wks., Richmond, Va.

Paint.
 Garry Iron & Steel Roofing Co., Cleveland, O.

Paint Burners.
 Dangler Stove & Mfg. Co., Cleveland, Ohio.

Paint Cans.
 Wilnot & Hobbs Mfg. Co., Bridgeport, Conn.

Pants Stretcher.
 Covert Mfg. Co., West Troy, N. Y.

Patent Solicitors.
 Butler, C. N., Phila., Pa.
 Jenner, H. W. T., Washington, D. C.
 Howson & Howson, Philadelphia and Washington.
 Stocking, E. B., Washington, D. C.

Pattern Letters.
 Wells, Heber, 157 William St., N. Y.

Perforated Metal.
 Clinton Wire Cloth Co., Clinton, Mass.
 Harrington & King Perforating Co., Chicago, Ill.
 Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Phosphor Bronze.
 Phosphor Bronze Smelting Co., Limited, Philadelphia.

Phosphor Tin.
 Crescent Phosphorized Metal Co., Philadelphia, Pa.
 Halk & Naumann, 616 Pearl, N. Y.

Picks and Mattocks.
 Plumb, Fayette R., Philadelphia, Pa.

Pig Iron.
 Houston, C. B. & Co., Philadelphia, Pa.
 Montour Iron & Steel Co., Danville, Pa.
 Naylor & Co., 45 Wall, N. Y.
 Pilling & Crane, Philadelphia, Pa.
 Samuel, Frank, Philadelphia, Pa.

Pig Iron Storage.
 Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.

Pile Drivers.
 Vulcan Iron Works, Chicago, Ill.

Pipe, Bent.
 National Pipe Bending Co., New Haven, Conn.

Pipe Cutting and Threading Machines.
 Armstrong Mfg. Co., Bridgeport, Conn.
 Bignall & Keeler Mfg. Co., St. Louis, Mo.
 Detrick & Harvey Mch. Co., Baltimore, Md.
 Merrill Mfg. Co., Toledo, O.
 Fancast, Henry B. & Co., Phila.
 Saunders' Sons, D., Yonkers, N. Y.
 Walworth Mfg. Co., Boston, Mass.

Pipe Grips.
 Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c., Makers of.
 McNab & Harlin Mfg. Co., N. Y.

Pipe, Water and Gas, Makers of.
 Donaldson Iron Co., Emaus, Pa.
 Riverside Iron Works, Wheeling, W. Va.
 Wood, R. D. & Co., Philadelphia, Pa.

Plane Irons, Manufacturers of.
 Buck Bros., Milbury, Mass.
 Buck, Chas., Milbury, Mass.

Planers.
 Detrick & Harvey Mch. Co., Baltimore, Md.
 New Haven Mfg. Co., New Haven, Conn.
 Sawyer Planer Co., Worcester, Mass.
 Wilson, W. A., Worcester, Mass.

Planes, Manufacturers of.
 Stanley Rule & Level Co., N. Y.

Plated Ware.
 Boardman, L. & Son, New Haddam, Ct.
 Holmes & Edwards Silver Co., Bridgeport, Conn.
 Rogers, Wm. Mfg. Co., Hartford, Ct.

Plate, Iron and Steel, Mfrs. of.
 Aetna-Standard Iron & Steel Co., Bridgeport, O.
 Lukens Iron & Steel Co., Coatesville, Pa.
 Mahoning Valley Iron Co., Youngstown, Ohio.
 Moorhead-McLean Co., Pittsburgh, Pa.
 McIlvain & Sons, Reading, Pa.
 Pottstown Iron Co., Pottstown, Pa.
 Pottsville Iron & Steel Co., Pottsville, Pa.
 Singer, Nimick & Co., Pittsburgh, Pa.
 The Mahoning Valley Iron Co., Youngstown, O.
 Wood, Alan Co., Philadelphia, Pa.

Plating, Nickel, Brass and Silver.
 Wilnot & Hobbs Mfg. Co., Bridgeport, Conn.

Polishing Machines.
 Watson & Stillman, 204 E. 42d, N. Y.

Post Hole Diggers.
 Gibbs Mfg. Co., Canton, Ohio.
 Kohler, F. E. & Co., Canton, O.

Poultry Nettings.
 Barnum, E. T., Detroit, Mich.
 Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
 N. J. Wire Cloth Co., Trenton, N. J.
 "Silver Finish."
 Tyler Wire Works Co., W. S., Cleveland, O.
 Wright & Colton Wire Cloth Co., Worcester, Mass.

Powder.
 Lafin & Rand Powder Co., 29 Murray.
 New York Powder Co., 62 Liberty St., N. Y.

Power Hammers.
 Dielen & Eisenhardt, Philadelphia.
 Dupont Mfg. Co., St. Johnsbury, Vt.
 Jenkins & Lingle, Bellefonte, Pa.
 Miner & Peck Mfg. Co., New Haven
 Scranton & Co., New Haven, Conn.

Power Transmitting Machinery.
 Dodge Mfg. Co., Mishawaka, Ind.

Presses, Dies, &c.
 E. W. Bliss Co., Brooklyn, N. Y.
 Crosby, G. A. & Co., Chicago, Ill.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Stiles & Parker Press Co., Brooklyn, N. Y.
 Waterbury Mch. Co., Waterbury, Ct.

Presses, Power, Makers of.
 Bliss, E. W. Co., Brooklyn, N. Y.
 Manville, E. J. Mch. Co., Waterbury, Ct.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.

Printers.
 Griffith, Axtell & Cady Co., Holyoke, Mass.

Pulleys.
 Brown, A. & F., 17 Dey St., N. Y.
 Dodge Mfg. Co., Mishawaka, Ind.
 Keystone Clutch Mch. Wks., Phila., Pa.

Pulverizing Mills.
 Bradley Pulverizer Co., Boston, Mass.

Pumping Machinery.
 Dean Bros. Steam Pump Works, Indianapolis, Ind.
 Goulds Mfg. Co., Seneca Falls, N. Y.
 Hooker-Colville Steam Pump Co., St. Louis, Mo.
 McGowan, J. H. & Co., Cincinnati, O.
 Maslin, J. & Son, Jersey City, N. J.
 Norwalk Iron Works Co., So. Norwalk
 Southwark Fdy. & Mch. Co., Phila., Pa.
 Valley Pump Works, Easthampton, Mass.
 Worthington, Henry R., 86 and 88 Liberty St., N. Y.

Pumps, Makers of.
 Deming Co., Salem, O.
 Douglas, W. & B., Middletown, Conn.
 Goulds Mfg. Co., Seneca Falls, N. Y.
 Millar, C. & Sons, Utica, N. Y.
 Myers, F. E. & Bro., Ashland, O.
 Peters Pump Co., Kewanee, Ill.
 Red Jacket Mfg. Co., Davenport, Iowa.

Punches.
 Richards, I. P., Providence, R. I.

Punches and Shears, Hand and Power.
 E. W. Bliss Co., Brooklyn, N. Y.
 Crosby, G. A. & Co., Chicago, Ill.
 Henderer, A. L., Wilmington, Del.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Stiles & Parker Press Co., Brooklyn, N. Y.
 Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
 Watson & Stillman, 204 E. 42d, N. Y.

Rails, Old and New.
 Perry, W. H. & Co., Providence, R. I.

Rat and Mouse Traps.
 Estey, W. S., 65 Fulton, N. Y.

Reels.
 Hendryx, A. B. Co., New Haven, Conn.

Refrigerator Door Fasteners.
 Conroy, P. J. & Co., Philadelphia.

Rivers.
 Blake & Johnson, Waterbury, Conn.
 Burden Iron Co., Troy, N. Y.
 Clark & Cowles, Plainville, Conn.
 Cobb & Drew, Plymouth, Mass.
 Sternbergh, J. H. & Son, Reading, Pa.
 Townsend, W. P. & Co., New Brighton, Pa.

Riveting Machines.
 Adt, Jno. & Sons, New Haven, Conn.

Rolling Mill Machinery.
 Birmingham Iron Fdry, Birmingham, Conn.
 Booth, The Lloyd Co., Youngstown, O.
 Leeburg Foundry & Mch. Co., Pittsburgh, Pa.
 Morgan Construction Co., Worcester, Mass.
 Robinson-Rea Mfg. Co., Pittsburgh, Pa.
 Totten & Hogg Iron and Steel Fdry. Co., Pittsburgh, Pa.
 Trohewey Mfg. Co., Pittsburgh, Pa.
 Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.

Rolls, Chilled, Sand and Steel.
 Birmingham Iron Foundry, Birmingham, Conn.
 Booth, The Lloyd Co., Youngstown, O.
 East Chicago Fdy Co., Chicago, Ill.
 G. A. & Co., Fdy Co., Pittsburgh, Pa.
 Robinson-Rea Mfg. Co., Pittsburgh, Pa.

Seaman, Sleeth & Black, Pittsburgh.
 Totten & Hogg Iron and Steel Fdry. Co., Pittsburgh, Pa.

Roll Paper Holders.
 Streeter, N. R. & Co., Groton, N. Y.

Roofing.
 Berlin Iron Bridge Co., E. Berlin, Conn.
 Cambridge Roofing Co., Cambridge, O.
 Cincinnati Corrugating Co., Piqua, O.
 Kanneberg Roofing Co., Canton, O.
 N. Y. Iron Roofing & Corrugating Co., Jersey City, N. J.

Rope and Web Goods.
 Covert Mfg. Co., West Troy, N. Y.
 Covert's Saddlery Wks., Farmer, N. Y.

Rope Wheels.
 Cresson, Geo. V. Co., Philadelphia, Pa.

Rubber Goods.
 Canfield, H. O., Bridgeport, Conn.

Rules, Manufacturers of.
 Keuffel & Esser Co., New York.
 Stanley Rule & Level Co., 29 Chambers

Rust Preventive.
 Bridgeport Gun Implement Co., 313 3.5 Broadway, N. Y.

Sad Irons.
 Enterprise Mfg. Co., Phila., Pa.
 Streeter, N. R. & Co., Groton, N. Y.

Sad Irons, Gas.
 Boigiano Mfg. Co., Baltimore, Md.

Sand Paper.
 Baeder, Adamson & Co., Phila., Pa.

Sash Balances.
 Caldwell Mfg. Co., Rochester, N. Y.
 Pullman Sash Balance Co., Rochester, N. Y.

Sash Cords and Chains.
 Morton, Thos., 65 Elizabeth, N. Y.
 Ossawan Mills Co., Norwich, Conn.
 Samson Cordage Works, Boston, Mass.
 Smith & Egge Mfg. Co., Bridgeport.

Sash Fasteners.
 Wooster, F. V., Boston, Mass.

Sash Pulleys.
 Palmer Hardware Mfg. Co., Troy, N. Y.

Sash Weights.
 Brown, E. E. & Co., Philadelphia, Pa.
 Norton Bros., Chicago, Ill.

Saw Filing Machines.
 Disston, Henry & Sons, Philadelphia, Pa.

Saws, Makers of.
 Atkins, E. C. & Co., Indianapolis, Ind.
 Butler Mfg. Co., Boston, Mass.
 Disston, Henry & Sons, Phila., Pa.
 National Saw Co., 96 Reade St., N. Y.
 Simonds Mfg. Co., Fitchburg, Mass.

Saw Vises.
 Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Saw Sets.
 Taintor Mfg. Co., 84-86 Chambers, N. Y.

Scales, Manufacturers of.
 Buffalo Scale Co., Buffalo, N. Y.
 Chatillon, John & Sons, 85-89 Cliff, N. Y.

Scrapers, Road.
 Am. Steel Scraper Co., Sydney, Ohio.
 Sidney Steel Scraper Co., Sydney, O.

Screen Door Braces.
 Clark, W. J. & Co., Salem, Ohio.

Screens, Coal and Ore.
 Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Screw Cutting Machinery.
 Wells Bros. & Co., Greenfield, Mass.
 Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
 Brown, R. H. & Co., New Haven, Conn.
 Mayhew, H. H. Co., Shelburne Falls, Mass.

Screw Plate and Pipe Cutter.
 Jarecki Mfg. Co., Erie, Pa.

Screws, Makers of.
 American Screw Co., Providence, R. I.
 Blake & Johnson, Waterbury, Conn.
 Wm. H. Haskell Co., Pawtucket.
 Miles, F. S., 205 Quarry, Philadelphia.
 Reynolds & Co., New Haven, Conn.
 Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
 Barnes, W. F. & John, Rockford, Ill.
 Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Seythe Stones and Whetstones.
 Pike Mfg. Co., Pike Station, N. H.
 Cleveland Stone Co., Cleveland, O.

Sewer Pipes.
 Sharon Clay Mfg. Co., Sharon, Pa.

Shade Hangers.
 South, W. A. Co., Salem, Mass.

Shaft Coupling.
 Columbian Novelty Co., North East, Penna.

Shafting, Makers of.
 Brown, A. & F., 17 Dey St., N. Y.
 Cresson, Geo. V. Co., Philadelphia, Pa.
 Fairmount Mch. Co., Philadelphia, Pa.
 Sellers, Wm. & Co., Inc., Phila., Pa.
 Stow Mfg. Co., Binghamton, N. Y.

Shaft Support.
 Decatur Shaft Support Co., Decatur, Ill.

Shaped Iron and Steel, Manufacturers of.
 Aetna-Standard Iron & Steel Co., Bridgeport, O.
 East Chicago Fdy Co., Chicago, Ill.

Allentown Rolling Mill, Allentown, Pa.
 Lookhart Iron & Steel Co., Pittsburgh, Pa.
 Passaic Rolling Mill Co., Paterson, N.J.
 Pottsville Iron & Steel Co., Pottsville, Pa.
 Roberts, A. & P. & Co., Phila., Pa.
 The Phoenix Iron Co., Phila., Pa.

Shears and Scissors.

Acme Shear Co., Bridgeport, Conn.
 Clauss Shear Co., Fremont, Ohio.
 Heinichs, R. Sons Co., Newark, N. J.

Sheet Iron and Steel, Manufacturers of.

Atna-Standard Iron and Steel Co., Bridgeport, O.
 Cambridge Iron & Steel Co., Cambridge, Ohio.
 Jersey City Galvanizing Co., 112 John St., N. Y.
 Mahoning Valley Iron Co., Livingston, Ohio.
 Morehead-McCleane Co., Pittsburgh, Pa.
 Pierson & Co., 29 Broadway, N. Y.
 Singer, Nimick & Co., Ltd., Pittsburgh, Pa.
 The Mahoning Valley Iron Co., Youngstown, O.
 Alan Wood Co., Philadelphia.
 W. Dewees Wood Co., McKeesport, Pa.

Sheet Zinc.

Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Brackets.

Atlas Mfg. Co., New Haven, Conn.
 Stanley Works, New Britain, Conn.

Show Cases.

Union Show Case Co., Chicago, Ill.

Sinks.

Douglas, W. & B., Middletown, Conn.

Skates, Ice.

Dame, Stoddard & Kendall, Boston, Mass.
 Keene Mfg. Co., Keene, N. H.
 Winslow, Sam'l, Skate Mfg. Co., Worcester, Mass.

Skates, Roller.

Henley, M. C., Richmond, Ind.
 Winslow, Sam'l, Skate Mfg. Co., Worcester, Mass.

Slag Machines.

Cambria Iron Co., Johnstown, Pa.

Slaw Cutters.

Tucker & Dorsey Mfg. Co., Indianapolis, Ind.

Smelting Works.

Reeves, Paul S., 760 S. Broad, Phila.

Soldering Coppers.

Clendenin Bros., Baltimore, Md.
 Covert Mfg. Co., West Troy, N. Y.

Speaking Tubes.

Ostrander, W. R. & Co., 204 Fulton St., N. Y.
 Wollensak, J. F., Chicago, Ill.

Spelter.

Matthiessen & Hegeler Zinc Co., La Salle, Ill.
 Missouri Metal Co., St. Louis, Mo.

Spoons and Forks.

Boardman, L. & Son, New Haddam, Conn.
 Holmes & Edwards Silver Co., Bridgeport, Conn.
 Rogers, The Wm. Mfg. Co., Hartford, Conn.

Sporting Goods.

Hartley & Graham, 313-315 B'way, N. Y.

Spring.

Clark & Cowles, Plainville, Ct.
 Coiled Wire Belting Co., Jersey City, N. J.
 Dunbar Bros., Bristol, Conn.
 Miller & Van Winkle, Brooklyn, N. Y.
 Morgan Spring Co., Worcester, Mass.
 Roland, Wm. & Harvey, Phila., Pa.
 Sabin Machine Co., Montpelier, Vt.
 Washburn & Moen Mfg. Co., Worcester, Mass.
 Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.

Spring Hinges.

Bommer Bros., Brooklyn, N. Y.
 Chicago Spring Butt Co., Chicago, Ill.
 Pullman Sash Balance Co., Rochester, N. Y.
 Stover Mfg. Co., Freeport, Ill.
 Van Wagoner & Williams Hdw. Co., 14 Warren St., N. Y.

Stamping Works.

Avery Stamping Co., Cleveland, O.
 Cleveland Stamping & Tool Co., Cleveland, O.

Staples.

Cobb & Drew, Plymouth, Mass.
 Titchener, E. H. & Co., Binghamton, N. Y.

Steam Gauges.

Bristol Co., Waterbury, Conn.

Steam Hammers, &c., Makers of.

Dienelt & Eisenhardt, Philadelphia.
 Dudgeon, Richard, 24 Columbia Street, N. Y.
 Tretlow Mfg. Co., Pittsburgh, Pa.

Steam Heating & Oil Separators.

Webster, Warren & Co., Camden, N. J.

Steam Separators.

Harrison Safety Boiler Wks., Phila., Pa.
 Webster, Warren & Co., Camden, N. J.

Steam Specialties.

Lunkenhimer Co., Cincinnati, O.

Steel, Cold Rolled Strip.

Superior Steel Co., Pittsburgh, Pa.
 Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Steel Figures and Alphabet.

Krogerud, W., 61 Fulton St., N. Y.

Steel Importers.

Abbott, Wheelock & Co., N. Y. and Boston
 Hobson, Francis, Seaman & Co., 97 John St., N. Y.
 Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
 Milne, A. & Co., 1 Broadway, N. Y.
 Newton & Shipman, 83 John, N. Y.
 Wetherell Bros., 93 Liberty St., N. Y.
 Whitney, A. R. & Co., Ltd., N. Y.
 Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel (Mushet's Special).

Jones, B. M. & Co., Boston.

Steel Manufacturers.

Atna-Standard Iron & Steel Co., Bridgeport, O.
 Bethlehem Iron Co., S. Bethlehem, Pa.
 Boker, Hermann & Co., 103 Duane St.
 Carbon Steel Co., Pittsburgh, Pa.
 Chester Steel Castings Co., Phila., Pa.
 Chrome Steel Works, Brooklyn, N. Y.
 Crescent Steel Co., Pittsburgh, Pa.
 Frankford Steel Co., Philadelphia.
 Gaudier Steel Department of Cambria Iron Co., Johnstown, Pa.
 Hobson, Francis, Seaman & Co., 97 John St., N. Y.
 Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
 Kayser, Ellison & Co., Sheffield, Eng.
 La Belle Steel Co., Pittsburgh, Pa.
 Lukens Iron & Steel Co., Coatesville, Pa.
 Moorhead-McCleane Co., Pittsburgh, Pa.
 Moss, F. W., 83 John, N. Y.
 Pottsville Iron and Steel Co., Pottsville, Pa.
 Bowland, Wm. & Harvey, Frankford, Philadelphia.
 Singer, Nimick & Co., Pittsburgh.
 Superior Steel Co., Pittsburgh, Pa.
 Valley Steel Co., St. Louis, Mo.
 Wordlaw, S. & C., Sheffield, Eng.
 Wetherell Bros., 93 Liberty, N. Y.
 Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Steel, Manufacturers' Agents.

Barns, C. K. & Co., Philadelphia, Pa.
 Butze, Adolph, St. Louis, Mo.
 Corning, Edw. & Co., 29 B'way, N. Y.
 Lindsay, Jas. G. & Co., Phila., Pa.
 Pierson & Co., 29 Broadway, N. Y.

Steel Rails, Manufacturers of.

Bethlehem Iron Co., S. Bethlehem, Pa.
 Cambria Iron Co., Johnstown, Pa.
 Montour Iron & Steel Co., Danville, Pa.
 Riverside Iron Wks., Wheeling, W. Va.

Steel, Tool.

Frankford Steel Co., Philadelphia, Pa.
 Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
 Jones, B. M. & Co., Boston, Mass.
 La Belle Steel Co., Pittsburgh, Pa.

Step Ladders, Rolling.

Bicycle Step Ladder Co., Chicago, Ill.
 Coburn Trolley Track Mfg. Co., Holyoke, Mass.
 Croissant, M., Albany, N. Y.

Stocks and Dies.

Armstrong Mfg. Co., Bridgeport, Conn.
 Billings & Spencer Co., Hartford, Conn.
 Butterfield & Co., Derby Line, Vt.
 Hart Mfg. Co., Cleveland, O.
 Oster Mfg. Co., Cleveland, O.
 Saunders' Sons, D. Yonkers, N. Y.
 Wells Bros. & Co., Greenfield, Mass.
 Wiley & Russell Mfg. Co., Greenfield, Mass.

Stone Saws and Planers.

Lincoln Iron Works, Rutland, Vt.

Stone Linings.

Ostrander Fire Brick Co., Troy, N. Y.

Stove Pipe Thimbles.

Cheney, S. & Son, Manlius, N. Y.

Stove Trucks.

Randall & Ward, Le Roy, N. Y.

Stoves, Gasoline.

Standard Lighting Co., Cleveland, O.

Street Lamps.

Rochester Lamp Co., 42 Park Place, New York.
 Steam Gauge & Lantern Co., Syracuse, N. Y.

Structural Iron Work.

Berlin Iron Bridge Co., East Berlin, Conn.
 Lindsay, Jas. G. & Co., Phila., Pa.

Sulphuric Acid.

Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Tacks, Brads, Staples, &c.

Atlas Tack Corporation, Boston, Mass.
 Chess Bros., Pittsburgh, Pa.
 Clendenin Bros., Baltimore, Md.
 Cobb & Drew, Plymouth, Mass.
 Grand Crossing Tack Co., Grand Crossing, Ill.

Tack and Nail Machinery.

Kimbal Bros. & Co., Brockton, Mass.
 Butterfield & Co., Derby Line, Vt.
 Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
 Manning, Maxwell & Moore, 111 Liberty St., N. Y.
 Wells Bros. & Co., Greenfield, Mass.
 Wiley & Russell Mfg. Co., Greenfield, Mass.

Testing Laboratories.

Riehle Bros. Testing Mach. Co., Philadelphia.

Testing Machines.

Riehle Bros. Testing Mach. Co., Phila.

Theatrical Hardware.

Wollensak, J. F., Chicago, Ill.

Thill Springs.

Frost Thill Spring Co., Boston, Mass.
 Sabin Machine Co., Montpelier, Vt.

Thrust Collars.

Gouverneur Mach. Co., Gouverneur, N. Y.

Time Record.

Scattergood, H. W., Phila., Pa.

Tin Plate Machinery.

Lloyd Booth Co., Youngstown, Ohio.

Tire Upsetters.

Butts & Ordway, Boston, Mass.

Toe Calks, Steel.

Burke, P. F., Boston, Mass.

Tool Chests.

Am. Tool Co., 200 W. Houston St., N. Y.

Tool Holders.

Armstrong Bros. Tool Co., Chicago, Ill.

Tools.

Brown, R. H. & Co., New Haven, Conn.
 Mayhew, H. M. Co., Shelburne Falls, Mass.
 Millers Falls Co., 93 Reade, N. Y.
 Richardson, C. F. & Son, Athol, Mass.
 Standard Tool Co., Athol, Mass.
 Stanley Rule & Level Co., 29 Chambers, New York.
 Starrett, L. S., Athol, Mass.
 Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.

Tools, Blacksmith and Wheelwright.

Buffalo Forge Co., Buffalo, N. Y.
 Butts & Ordway, Boston, Mass.
 Champion Blower & Forge Co., Lancaster, Pa.
 Oster Mfg. Co., Cleveland, Ohio.
 Plumb, Fayette R., Philadelphia, Pa.
 Wiley & Russell Mfg. Co., Greenfield, Mass.

Tools, Steam and Gas Fitters'.

Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasoline.

Dangler Stove & Mfg. Co., Cleveland, O.
 Schneider & Trenkamp Co., Cleveland, Ohio.

Transom Lifters.

Wollensak, J. F., Chicago, Ill.

Trucks, Manufacturers of.

Clark, G. P., Windsor Locks, Conn.

Tubes, Seamless Drawn Copper.

Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
 Randolph & Clowes, Waterbury, Conn.

Tubes, Steel.

Avery Stamping Co., Cleveland, O.
 Leng's, John S. Son & Co., 4 Fletcher St., New York.
 U. S. Projectile Co., Brooklyn, N. Y.

Tumbling Barrels.

Henderson Bros., Waterbury, Conn.

Turnbuckles.

Cleveland City Forge & Iron Co., Cleveland, O.
 Merrill Bros., Brooklyn, E. D.

Twist Drills, Makers of.

Cleveland Twist Drill Co., Cleveland.
 Morse Twist Drill & Machine Co., New Bedford, Mass.
 New Process Twist Drill Co., Taunton, Mass.
 Standard Tool Co., Cleveland.

Valves, Gas, Water and Steam.

Chapman Valve Mfg. Co., Boston.
 Eynon-Evans Mfg. Co., Philadelphia, Pa.
 Jenkins Bros., 71 John, N. Y.
 Lunkenhimer Co., Cincinnati, O.
 McNab & Harlin Mfg. Co., 56 John, N. Y.
 Ventilator Appliances.
 Howard & Morse, 15 Fulton St., N. Y.
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 Newark Mch. Tool Co., Newark, N. J.
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 Hollands Mfg. Co., Erie, Pa.
 Howard Iron Works, Buffalo, N. Y.
 Millers Falls Co., 93 Reade St., N. Y.
 Parker, Chas. Co., Meriden, Conn.
 Prentiss Vise Co., 44 Barclay, N. Y.

Wagon Jacks.

Covert Mfg. Co., West Troy, N. Y.
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Washers.

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 Milton Mfg. Co., Milton, Pa.
 Newbury, Jay Herbert, Guilderland, N. Y.
 Sternbergh, J. H. & Son, Reading, Pa.

Washing Machines.

Richmond Cedar Wks., Richmond, Va.

Water Meters.

Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.

Poole, Robt. & Son Co., Baltimore, Md.

Wheelbarrows.

Amer. Steel Scraper Co., Sidney, Ohio.
 Bryan Mfg. Co., Bryan, Ohio.
 Sidney Steel Scraper Co., Sidney, O.
 Whittington & Cooley Mfg. Co., Jackson, Mich.

Window Cord, Makers of.

Samson Cordage Works, Boston, Mass.

Wire, Manufacturers of.

Gaudier Steel Department of Cambria Iron Co., Johnstown, Pa.
 Miller & Van Winkle, Brooklyn, N. Y.
 New Castle Wire Nail Co., New Castle, Pa.
 New Haven Wire Mfg. Co., New Haven, Conn.
 Salem Wire Nail Co., Salem, O.
 Trenton Iron Co., Trenton, N. J.
 Washburn & Moen Mfg. Co., Worcester.
 Wetherell Bros., 93 Liberty St., N. Y.
 Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
 Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Cloth.

Barnum, E. T., Detroit, Mich.
 Clinton Wire Cloth Co., Clinton, Mass.
 Darby, Edward & Sons, Philadelphia.
 Eatey, W. S., 65 Fulton, N. Y.
 Gilbert & Bennett Mfg. Co., 42 Cliff, N. Y.
 Howard & Morse, 45 Fulton, N. Y.
 Ludlow-Saylor Wire Co., St. Louis, Mo.
 N. J. Wire Cloth Co., Trenton, N. J.
 Schaefer & Sons, Buffalo, N. Y.
 Wickwire Bros., Cortland, N. Y.
 Wright & Colton Wire Cloth Co., Worcester, Mass.
 W. S. Tyler Wire Works Co., Cleve'd.

Wire Cutters.

Higginum Hdw. Co., Higginum, Conn.
 King, J. M. & Co., Watertown, N. Y.

Wire Dies.

McFarland, Wm., Trenton, N. J.
 Newton & Shipman, 83 John St., N. Y.

Wire Fences, See Fencing, Iron and Wire.

Wire Goods, Manufacturers of.

Bromwell Brush & Wire Goods Co., Cincinnati, Ohio.
 Darby, Edward & Sons, Phila.
 Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
 Ludlow-Saylor Wire Co., St. Louis.
 Ossawan Mills Co., Norwich, Conn.
 Scheeler & Sons, Buffalo, N. Y.
 Wickwire Bros., Cortland, N. Y.
 Williamson, C. T., Wire Novelty Co., Newark, N. J.
 Wire Goods Co., Worcester, Mass.

Wire Machinery.

Am. Tool Wks., Cleveland, O.
 Manville, E. J. Mch. Co., Waterbury, Ct.
 Morgan Construction Co., Worcester, Mass.
 Waterbury Mch. Co., Waterbury, Conn.

Wire Straightening and Cutting Machinery.

Adt, John & Son, New Haven, Conn.

Wire Nails.

Bond Nail Co., Raynham, Mass.
 Indiana Wire Fence Co., Crawfordsville, Ind.
 Kilmer Mfg. Co., Newburg, N. Y.
 New Castle Wire Nail Co., New Castle, Pa.
 Phillips, Townsend & Co., Phila., Pa.
 Salem Wire Nail Co., Salem, O.
 Taunton Wire Nail Co., Taunton, Mass.
 Whitney, A. R. & Co., New York City.

Wire Rods, Steel.

New Castle Wire Nail Co., New Castle, Pa.
 Washburn & Moen Mfg. Co., Worcester, Mass.
 Whitney, A. R. & Co., 17 B'way, N. Y.
 Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Wire Rope, Iron and Steel, Makers.

Broderick & Bascom Rope Co., St. Louis, Mo.
 California Wire Works, San Francisco.
 Hazard Mfg. Co., Wilkesbarre, Pa.
 A. Leschen & Sons Rope Co., St. Louis.
 Trenton Iron Co., Trenton, N. J.
 Washburn & Moen Mfg. Co., Worcester, Mass.

Wire Rope Machinery.

Kay, J. F., Passaic, N. J.

Wood Turning.

Cleveland Wood Turning Co., Cleveland, O.

Wood-Working Machinery.

Fay, J. A. & Co., Cincinnati, O.
 Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Wrenches, Manufacturers

Bemis & Call Hardware & Tool Co., Springfield, Mass.
 Billings, Spencer & Co., Hartford, Conn.
 Coes Wrench Co., Worcester, Mass.
 Trimont Mfg. Co., Roxbury, Pa.
 Walworth Mfg. Co., Boston, Mass.

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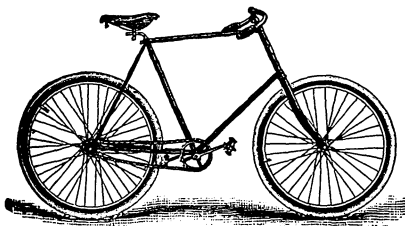
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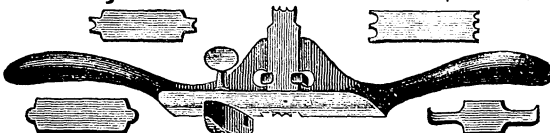
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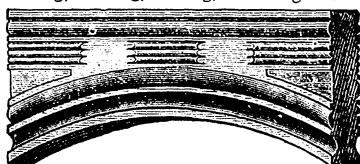
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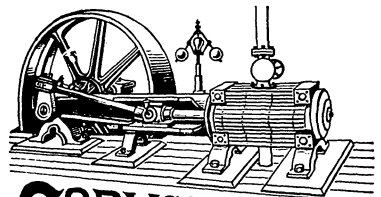
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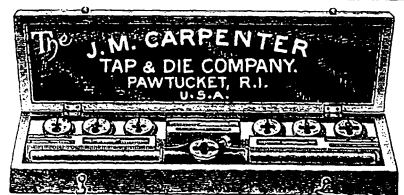
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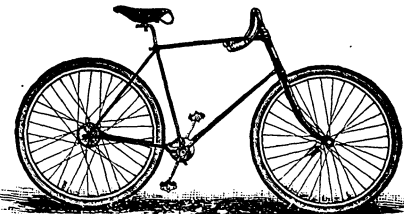


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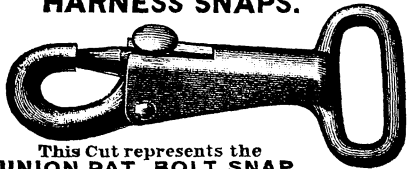
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Multiple Spindle Vertical Drills.

The vertical drill shown in Fig. 1 drills 24 holes, or a less number, from $\frac{3}{8}$ to $\frac{3}{4}$ inch in diameter within a space of 26 x 8 $\frac{1}{2}$ inches, in an infinite variety of shapes and forms—oval, square, round, &c. Each spindle is provided with an independent adjustment of 3

made for the adjustment of the drill spindles, so that they may be placed in any desired position in relation to each other. The spindles are divided into three groups, as shown plainly in the engraving.

The adjustable multiple spindle drill shown in Fig. 2 is made with eight or more spindles, and is intended for work on bicycle hubs. These spindles are

hub drilling, the machine is adapted to other work. The spindles need not be set around in a circle, but can be arranged in any required position. The table measures 12 x 8 inches, and the distance from the column to the center of the table is 5 $\frac{1}{2}$ inches. The vertical travel of the table is 7 $\frac{1}{2}$ inches, and the lowest position of the table from the end of the drill collet is 9 inches. The

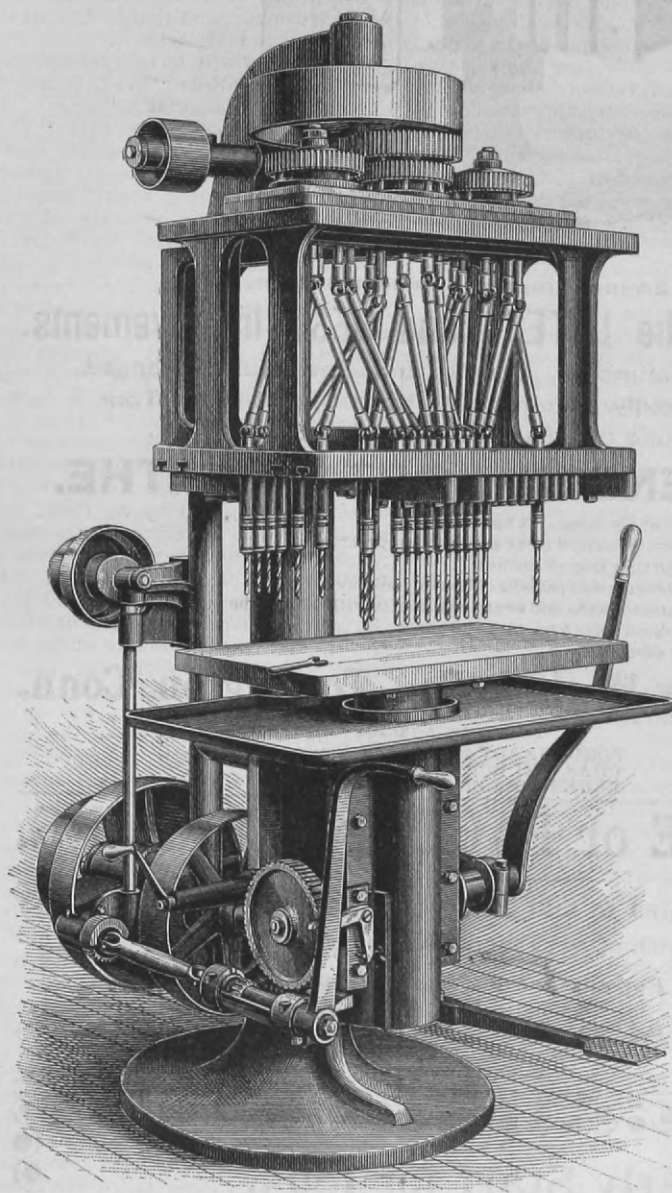


Fig. 1.—Twenty-four Spindle Drill.

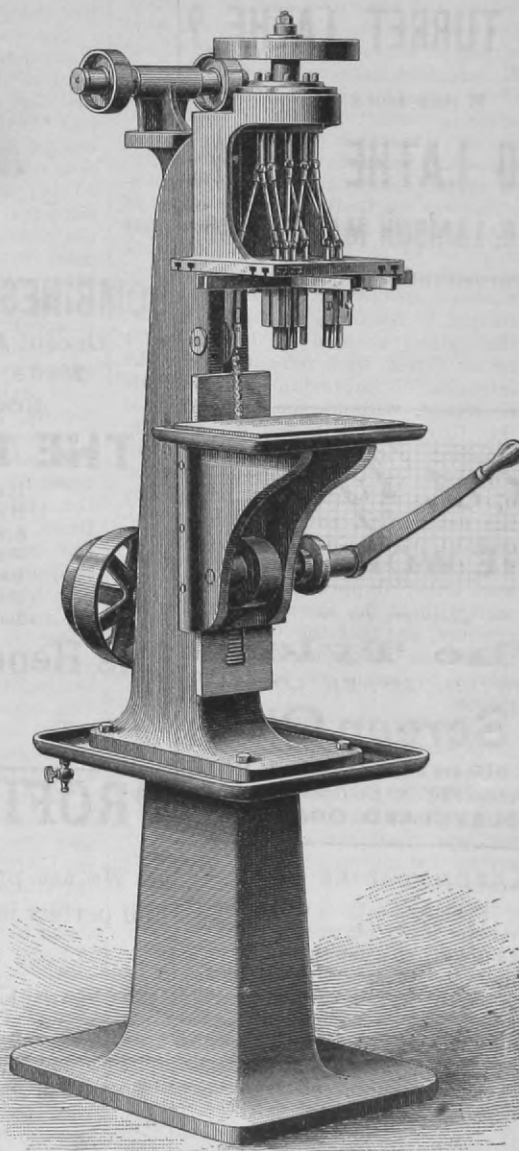


Fig. 2.—Adjustable Multiple Spindle Drill.

MULTIPLE SPINDLE VERTICAL DRILLS.

inches for the vertical movement of the drills. The machine has three speeds for different sizes of drills. The table is carried by a column, as shown, and there is power feed with automatic knock-off for limiting the travel of the table. As will be observed the drills are driven from the top of the frame by gears and pinions. Each drill spindle proper is connected with the driving portion by a rod provided at each end with a universal joint. Provision is also

easily adjusted to different diameters of hubs. A hardened steel plate and jig for holding the work is furnished when desired. The spindles are set to drill every alternate hole. A pivot on the underside of the fixture fits into the hardened steel plate, and the fixture swings between two fixed stops. One half the number of holes are drilled when the fixture is held against one stop and the other half when held against the other stop. In addition to bicycle

table is operated by hand. The speed of the spindles is 700 and 475 revolutions per minute. Both of these drills are built by the Pratt & Whitney Company of Hartford, Conn.

Wall street rumors, said to be well founded, are to the effect that something definite is to be announced very shortly about the Reading reorganization, and that the Vanderbilts are to be represented in the road.

The Armor Plate Report.

Last week the committee of the House which had charge of the investigation of the alleged defective armor plates furnished to the Government by the Carnegie Steel Company of Pittsburgh made a lengthy report. The charges against the company are summarized as follows:

That plates did not receive the uniform treatment required by the specifications of the contract; that false reports of the treatment of plates were systematically made to Government inspectors; that bolts did not receive the double treatment required; that specimens taken from the plates, both before and after treatment, to ascertain the tensile strength of each plate, were stretched without the knowledge of the Government inspectors, so as to increase their apparent tensile strength when actually tested; that false specimens, taken from other plates, were substituted for specimens selected by Government inspectors; that the testing machine was manipulated by the order of the superintendent of the armor plate mill so as to increase the apparent strength of the specimens; that specimens selected by the inspectors were retreated before being submitted to test; that plates selected by inspectors for ballistic test were retreated with the intention of improving their ballistic resistance, without the knowledge of the Government inspectors; that, in violation of the contract, pipes or shrinking cavities, erroneously called blow holes, in plates were plugged by the contractors, and the defects concealed from the Government inspectors; that the Government inspectors' stamp was either duplicated or stolen, and used without the knowledge of the inspectors, and that the Government inspector in inspecting bolts was deceived by means of false templates or gauges.

Following the charges the report gives what "is admitted."

Under the first charge, Superintendent Schwab, a stockholder of the company, admits that plates did not receive uniform treatment, explaining this by saying that uniform results alone were required.

The specifications under the contract require that "all members of a group shall receive a practically uniform treatment." It specifies treatment to be given under the Harvey process and adds: "The ballistic test is the chief one, and the object of all the other tests of plates is to insure, so far as possible, that the remaining plates of a group are capable of standing as severe a test as that to which the test plate has been subjected, and the conformity required among the plates of a group will be only such as may be necessary for this purpose."

In the first contract the requirements with regard to similar tests taken before the treatment are that the variations in the ingot from the mean must not be large, intimating that uniformity in quality was required before treatment rather than afterward, which, of course, would follow a uniform treatment. The extracts from the specifications certainly show that they mean the uniform quality before treatment and practically uniform treatment, when practically uniform results would necessarily follow. If uniform results alone had been meant there would have been no necessity for requirements as to process.

The second charge is proved by the rough records of the company themselves of over 700 plates and lots of bolts which came into the hands of the Navy Department. These records originally gave the actual treatment of the plates. They were carefully examined by the committee. The figures were taken from the slates of the heaters employed at the furnaces each morning and reported to the superintendent by his clerk. That the original figures were correct is proved by their comparison with the time books of the heaters, in which every operation of heating was given by them in detailing their work each day. These books were also in evidence before the committee. The figures were taken by the clerk of the superintendent, W. A. Cline, who had charge of the heating of the plates.

The records show that the superintendent almost invariably changed the figures. In some cases he returned to his clerk an entirely new report in his own handwriting. There were fake reports of treatment of plates that had received no treatment whatever. Over 95 per cent. of the records examined show that Superintendent Cline changed the reports to be made to the Government inspectors, the changes evidently being made for the purpose of deceiving the Government inspectors, making it appear that the plates had received the uniform and efficient treatment required by the contract.

In trying to account for these false reports, Superintendents Schwab and Corey explained that Clerk Cline had added to the original report taken from the slate the treatment that the plates had received at previous times. In other words, where a plate had been heated for bending or for straightening, he says, weeks or even months before, this treatment was credited and added to the treatment which it had last received. It is in evidence that Cline kept such a record, but he destroyed it after the investigation began.

The treatment of the bolts, however, thoroughly exposes the falsity of this explanation. All the superintendents acknowledge that they never received but one treatment, whereas in every case two treatments were reported to the Government inspectors. It was of the utmost importance that bolts should receive two treatments. The peculiar shock to which they would be subjected in battle from projectiles and from ramming required it. Experiments made show that unless this treatment was given to the bolts they would break under a heavy blow, rendering the armor, in a measure, useless.

The investigation shows that there were only two furnaces for the treatment of the plates and bolts up to September, 1892. After this a third furnace was added, and the three were used until August, 1893, when a fourth was added. After information of frauds practiced in the works was given and a penalty exacted by the decision of the President, other furnaces were added, until to-day ten are in use.

It is clearly evident to the committee that there were not enough furnaces to turn out the work reported, if plates were treated according to the specifications of the contract and in accordance with the direction of the Government inspectors.

The charge that "specimens taken from the plates, both before and after treatment, to ascertain the tensile strength of each plate, were stretched without the knowledge of the Government inspectors, so as to increase their

apparent tensile strength," is admitted by Superintendent Corey. When questioned concerning the stretching of these specimens, Superintendent Schwab said that he knew it before the investigation, but that it was done without his knowledge or sanction. He added, however, that he would not have objected to it if he had had any knowledge of it.

The allegation that "false specimens taken from other plates were substituted for the specimens selected by the Government inspectors" is also practically admitted by Superintendent Corey. He said that he knew indirectly that such was the case; that he believed it to be true; that he had heard it mentioned in the works before it came out in the testimony, and that he had made no attempt to investigate it.

When asked why he had not investigated it he replied: "Well, it was a matter of small importance."

The further allegation that "The testing machine was repeatedly manipulated by order of the superintendent of the armor plate mill, so as to increase the apparent tensile strength of the specimens," is admitted by Superintendent Corey, and practically admitted by Superintendent Schwab. Superintendent Corey acknowledges that the man at the machine increased the apparent strength of specimens by "jockeying with the levers." In addition to this acknowledgment, Superintendent Schwab admits that whenever it was necessary to bring the tensile strength of a specimen up to the minimum, the machine could be run very fast, and by its speed the specimen would be recorded as possessing from 3000 to 4000 pounds increased tensile strength. He claims that this manipulation was legitimate, and that the increased tensile strength obtained was the real tensile strength of the material. The specifications say that a principal object of the tests was to ascertain whether each plate was up to the minimum requirements of the contract, without which it could not honestly be delivered to the Government.

The charge that specimens taken for physical tests were retreated, although not acknowledged by Superintendent Corey, is practically proven by a report from the Ordnance Board printed in the evidence. They say that 105 of the first 700 plates were passed on a second test. To avoid the possibility of armor plates being rejected through specimens containing local defects, the specifications permit the contractors in case of a failure to reach the requirement to submit a second specimen from the immediate vicinity of the first, without additional treatment of the plate. Of the 105 duplicate specimens submitted, only three failed to exhibit an improvement in quality, and in the case of 59 specimens the increase of strength was accompanied by a decrease of ductility. High ductility, when increased, was accompanied by a decrease of strength, so that it was clearly indicated that the second specimen had been hardened or softened, so as to indicate the qualities required by the specifications.

Superintendent Corey admits that part of the eighth charge which alleges that the plates selected by the Government inspectors for a ballistic test were retreated without the knowledge of the inspector. He confines his admission to three test plates, A468, A531 and A619. The first carried a group of 9-inch armor, intended for the "Monadnock;" the second carried a group

of 7-inch armor, intended for the "Monterey," the last carried a group of 8 inch barrette plates to be used on the battle ship "Oregon." Included in the same group were a number of deck and side plates for the ram "Katahdin."

Superintendent Corey denies that his retreatment was given with the intention of improving the ballistic resistance of the plates. He says that he gave them this unlawful treatment and retreatment as an experiment, alleging that by this he could ascertain whether a retreatment and repeated retreatment benefited the plates. In other words, as he puts it, he did not treat the plates to improve them, but to ascertain whether or not the retreatment would improve them. Under the contract he had no right whatever to experiment with the plates, after they had been chosen as samples of the groups, either with or without the consent of the Government inspector, and he acknowledges that he concealed this retreatment from them.

There is no doubt in the minds of the committee that the secret retreatment was given to increase the ballistic resistance of the plates with the express purpose of passing inferior groups and of securing premiums thereon, as the groups had been nominated for premiums. The company's officers would hardly risk the rejecting of 779 tons of armor, valued at over \$410,000, in making experiments, unless they were positive that it was safe to do so.

The contention of Superintendent Corey is that the new plates were so good that they would bear the secret retreatment, which he called experimenting, without being injured thereby.

The real truth undoubtedly was that the superintendent and his assistants know that the retempering and annealing could not but benefit the metal and increase the company's chances of passing the plates and obtaining premiums, and, knowing this, and knowing that in many cases the plates had received no proper treatment, therefore they secretly retreated the specimen plates selected for ballistic tests.

But the conclusive answer to the superintendent's argument is that the necessary treatment should have been given honestly to all the plates of the group before a particular plate was chosen as a specimen and not to the specimen plate alone, secretly and fraudulently, after it had been chosen for the test.

Superintendent Corey announced in his testimony that the retreatment of these plates was made upon his own responsibility and without the knowledge of his employers. This may be true, or it may be merely an effort to shield the company, for he admits that the secret retreatments were given to the plates after he had talked with Mr. Schwab, the superintendent of the company, and one of its stockholders concerning the matter.

And it may be worthy of remark in this connection that the principal parties to these frauds, Superintendents Schwab and Corey are still retained in the employ of the company.

Superintendent Corey acknowledged that the bottom half of plate A619 had been secretly retreated, but denied that the top half had been retreated. The Navy Department received information that the whole of this plate had been retreated. A board appointed to investigate the matter were of the opinion that the whole plate had received retreatment. A ballistic test showed the top half superior to the bottom half;

the two halves of the plate where cut showed different "feed" or tool marks, and the specimens taken from the two halves differed materially on being tested.

Other confirmatory evidence that the top half was not the real half of A619 was shown by the test specimens. These were also before the committee. The corresponding halves in the two plates invariably showed phenomenal variations. The elongation, tensile strength, elastic limit, contraction of area and nature of fracture have been fully determined. The upper plate, as the specimens showed when placed before the committee was tough and fibrous, and the lower plate brittle; in each case the difference was more than strongly marked—it was abnormal; so much so that one of the committee remarked that it looked as though they were made of two different metals, one pot metal and the other forged steel. Superintendent Corey volunteered no explanation of these phenomenal differences.

These specimens were all examined by the committee, and in their opinion strongly corroborate Captain Sampson's belief that the alleged top half of plate A619 was really the bottom half of some other plate.

The ninth charge, that in violation of the specifications of the contract, pipes or shrinking cavities, erroneously called blowholes, were plugged by the contractors and the defects concealed from the Government inspectors, is admitted by Superintendents Corey and Schwab. They allege that in all cases these plates would pass the requirements of the ballistic tests.

The tenth allegation, that the inspector's stamp was either duplicated or stolen and used without the knowledge of the Government inspectors is, in the opinion of your committee, hardly sustained. The stamp may have been used in some instances without the knowledge of the Government inspector while his attention was diverted to something else, but there was nothing systematic about it, and there is no evidence that it was either duplicated or stolen.

The eleventh allegation, that the Government inspector, in inspecting bolts, was deceived by means of false templates, or gauges, is unsupported.

Cramps' Shipyard.—The Cramp Shipbuilding Company of Philadelphia are very anxious, says the *Philadelphia Ledger*, to begin operations on the extensive improvements to their big plant, authorized by the City Council. The only impediment to the commencement of the work is the delay of the railroad company in removing their tracks, before which the Cramp Company cannot begin work on their newly acquired ground. It is not proposed by the Cramps to remove any part of the actual plant from its present location on the river side of Beach street, but to utilize the proposed additional ground as storage sheds and for shops. The engines for the American Liner "St. Louis" are building now in a portion of the planing machine shops located over the improvement line, where also the frame work for the "Indiana's" forward turret is being erected. The after turret was transhipped from here across Beach street and put into position on the battleship last week, a portion of the gateway at York street being removed for the passage of the huge mass, weighing, with the backing of Georgia pine for the armor plates, 68 tons, the giant derrick Atlas lifting it

into place, where it awaits the 18-inch armor to transform it into one of the most invulnerable turrets afloat.

Torpedo and Battleship.

Photographs just received by the Navy Department from Admiral Kirkland, commanding the South Atlantic station, show the extent of the damage done to the Brazilian war ship "Aquidaban," which was sunk by a torpedo in Santa Catharina Bay last spring. The report accompanying the pictures shows that the ship was struck on the port bow, well forward, between the sixth and seventh frames, the injury extending from the bow on the twelfth frame and below the protected deck to the keel. The deck was shown to have been uninjured. All the bilge frames and interior work on the port side were crushed as though they had been made of paper, the torpedo plunging through the vessel to the starboard side and tearing away her sides and splintering the great steel plates with apparent ease. The watertight bulkheads were entirely carried away, the two forward compartments were flooded, and the vessel filled and went down like a rock.

On the starboard side, 2 feet above the keel and near the seventh frame, a hole was made fully 2 feet in diameter, the ragged edges of which flanged outward and aft, showing the direction of the missile to have been broad off the port bow. This hole is believed to have been made by the head of the torpedo being blown completely through the ship in its original direction. The frames, longitudinals and plating near the explosion were greatly twisted, but the remainder of the hull is in good condition, and was apparently not injured by the explosion. The vessel was raised by the Government, and is now in dry dock being repaired.

Water Tube Marine Boilers.

The following item from the *Marine Review* is interesting at the present time when the subject of water tube boilers for vessels is attracting so much attention:

Inquiry among the builders and engineers of the "Cleveland," the new boat built for the Cleveland Fire Department, elicits the information that the use of water tube boilers in the boat is quite satisfactory and that they are especially adapted to the service required. About 100 pounds of steam is kept up all the time, and this is maintained even when all the pumping machinery is in use. Before the boat was hardly completed she was used at a 17 hour fire. With one pump the 3 inch nozzle was used to tear down the lumber piles, when eight 1½ inch streams were used for the rest of the time. The steam produced and maintained was quite satisfactory. A Scotch boiler using river water for feed would get very dirty in a week's time, but the water tube boilers in the "Cleveland" had little or no sediment in them after being in use five weeks. Although the "Cleveland" has been in operation at a number of small fires, she has not had an opportunity since she was accepted by the department to show what she can do.

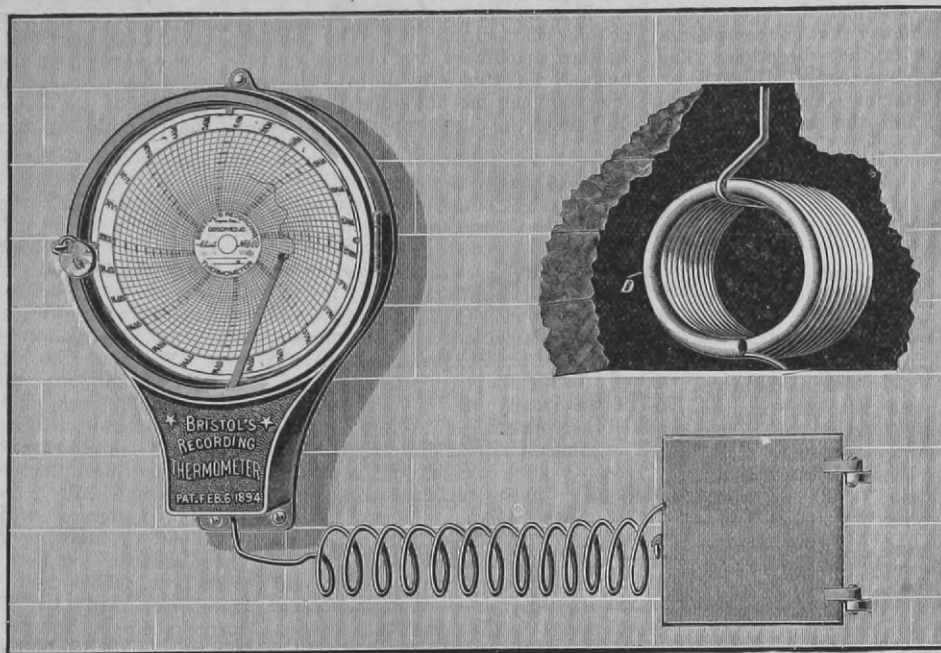
Nearly 100 tons of forgings for 10 and 12 inch guns were shipped last week from the Ordnance Works of the Bethlehem Iron Company, Bethlehem, Pa., to the Watervliet Arsenal.

The Bristol Recording Thermometer for Closed Spaces.

In designing this thermometer the object has been to produce an instrument which would make a continuous record, day and night, of the temperature in heaters, ovens, dry kilns, and such close spaces, and at the same time

recording pressure gauges. The coil D in the oven is partly filled with alcohol and the remaining air is exhausted. When heat is applied to the coil the vapor of the alcohol condenses and completely fills the pressure gauge tube and the small copper tube leading to it. The pressure due to the temperature of the oven or kiln is transmitted to the recording gauge. The scale on the

in rubber works for the past four months for keeping a record of the temperature in heaters during the process of vulcanizing rubber goods. These thermometers are manufactured by The Bristol Company of Waterbury, Conn. The working model of this apparatus was exhibited and described at the Brooklyn meeting of the American Association for the advancement of



THE BRISTOL RECORDING THERMOMETER FOR CLOSED SPACES.

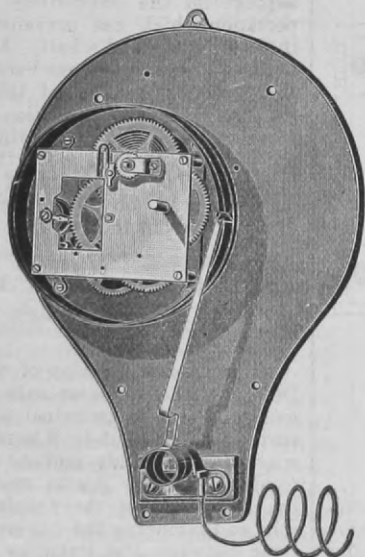


Fig. 2.—Interior of Recording Apparatus.

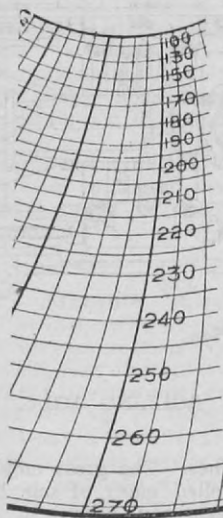


Fig. 3.—Specimen Section from Chart.

permit the recording portion of the apparatus to be located at any convenient point outside of the room or kiln where the temperature is to be measured. The instrument is shown in Fig. 1, set up and ready for operation. The wall of the oven is broken away, showing the coil of pipe, suspended at the point where it is desired to measure the temperature. The recording part of the instrument is shown at the left side and is connected to the coil D, in the kiln or oven, by a small flexible copper tube. Fig. 2 shows the interior of the recording portion of the apparatus which consists simply of one of Bristol's

gauge chart is graduated in degrees Fahrenheit by means of a standard thermometer. The coil D is immersed in oil for standardizing and graduating the chart. There is no compensation required for changes of temperature in the room where the recorder is placed, as the small copper tube is completely filled with alcohol and the pressures due given temperatures are always the same. Fig. 3 shows a specimen section from chart of one of these thermometers for a range of 270° F. It will be observed that between 170 and 270° the scale is very open. A number of these instruments have been in successful operation

Science by Prof. W. H. Bristol of Stevens Institute of Technology.

The Detroit Stove Works, under the supervision of their superintendent, Lafayette Crowley, have just completed for the committee on standard tests of the American Society of Mechanical Engineers the castings of 12 series of tests bars; each series comprises in duplicate every size of test bar that has ever been used, ranging from $\frac{1}{4}$ to 4 inches square, and for transverse, tensile or compression test. A separate heat was made for each series in a cupola especially arranged for this work, and the silicon was made to vary from 1 to $3\frac{1}{2}$ per cent. Six of the series were made from Iroquois (coke) pig, and six from Hinkle (charcoal) pig iron. As the member of the committee who has this matter in charge is W. J. Keep, we shall expect some valuable conclusions regarding the relative strength, shrinkage and chill due to change in composition and size of the casting.

It is not believed that the work of constructing the new bridge over the Delaware near Bridesburg, Pa., will be begun until next year. The engineers of the Pennsylvania Railroad have completed the work of taking soundings for the abutments on both the Pennsylvania and New Jersey shores, and running the line of the bridge, but the lines of the connecting railroads have not yet been run.

The Berry Engineering Company of Chester, Pa., were incorporated at Harrisburg last week with a capital of \$20,000. George W. Schofield and John Mason of Philadelphia are among the directors named.

San Francisco News.

The fall trade has about started up, but it is as yet only light. It, however, promises to be much better than was expected some time since. Confidence has returned, or rather is slowly returning, and we expect a fair fall trade. Many are, too, beginning to think that business was not quite as bad as they had supposed. One leading firm, comparatively newly established, report business brisk, and say that no complaints can be made in that direction. The union of the business of Miller, Sloss & Scott and that of Huntington, Hopkins & Co., and the closing out of

this applies not only to hardware, but to merchant iron and to steel and most other things in the iron and steel trade.

The outlook of the machinery business deserves a separate paragraph. Owing to the many new industries continually springing up on various parts of the Coast, to the lands brought under cultivation by irrigating machinery, to the new development of gold mining, and many other causes, new machinery is constantly needed. There is, it must be confessed, no lack of people who supply it. The sale of Eastern machinery has become a great business in this city during the past few years and has not suffered from the dull times in like proportion to other

increase in the volume of individual orders, and this related to all descriptions of machinery. Demand had been very light in iron and wood working machinery. There had been a better demand in the line of mining machinery, but most of the new gold mines opened had not reached the point of development where any considerable plant was required. Low prices were the rule in every description of machinery, and that required in any sort of enterprise can be had at 20 per cent. less than it could have been two years ago. This comes partly from the general reduction of prices, consequent on the financial troubles of the country, and partly on the reduction of railroad freights, con-

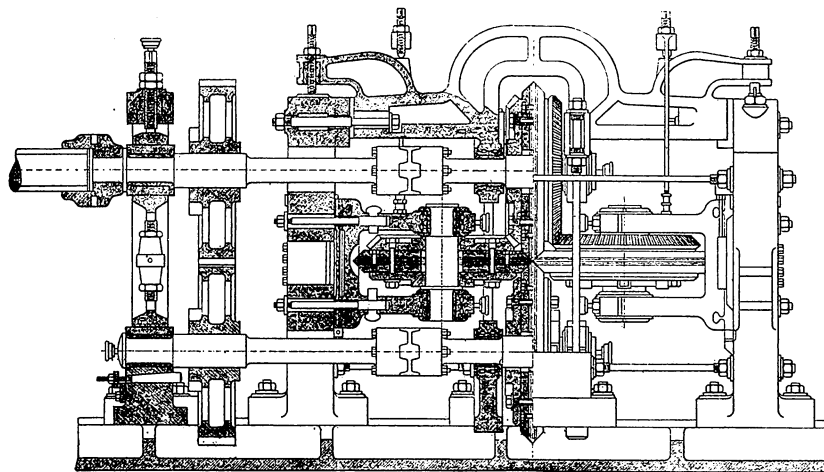


Fig. 1.—Side Elevation and Section.

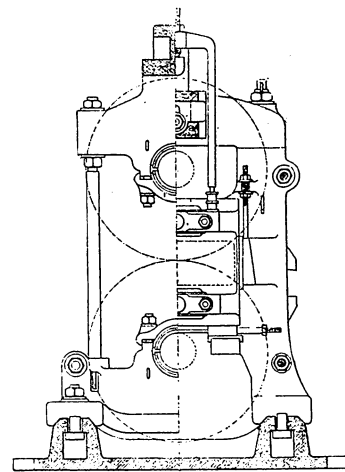


Fig. 3.—Side Elevation.

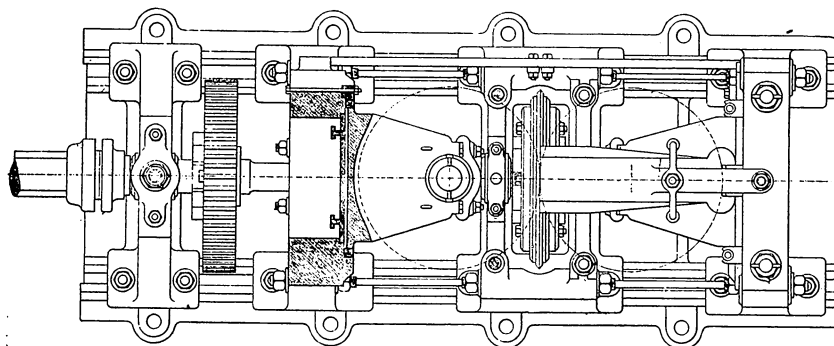


Fig. 2.—Plan.

THE KLATTE CHAIN ROLLING MILL.

Carolan, Cory & Co. of course helped out the other firms, as it left more trade to be divided up among them. Then, too, dullness had been succeeded by considerable activity, and at present our hardwaremen are generally inclined to look on the bright side of things. For the past three weeks the Clearing House exchanges have been larger than they were for the same time in 1893. Thus for the past week they were \$13,416,342 as against \$11,803,083 for the same time in 1893. The percentage here is not large, but it is sufficient to inspire confidence, and helps to guarantee a return of better times.

The wheat crop has begun to move, while the fruit crop is going East at a great rate, over 14,000 tons for July from northern California, and about 20,000 tons from the whole of the State. New life is being infused into trade, and if all signs do not fail we shall have an excellent fall trade, and

lines. The great molders' strike compelled many of our builders, mining men and others to obtain supplies formerly had at home in the East, and that trade has remained with those who are agents of great Eastern manufacturing establishments. The cessation of a good part of the old trade, owing to dull times, therefore only cuts down the business of many houses dealing in Eastern goods to something like the volume enjoyed before the strike. A gentleman connected with a firm who deal heavily in Eastern goods says that the outlook for 1894 was better than that for 1893, which was exceptionally dull. However, the tariff agitation and a tight money market caused dealers in machinery to suffer with the rest. Of late, however, he claimed that there had been a material improvement. There was a considerable increase in the number of inquiries, though there had not been any

sequent on the competition in transportation which has prevailed during the past year and a half. Money has been tight and collections hard to make, and it was the opinion of this gentleman that this latter condition of things was likely to last for some time yet, or until confidence has been thoroughly restored. The settlement of the tariff question was, he said, necessary to bring this about thoroughly.

The Klatte Method of Rolling Weldless Chains.

At the recent meeting of the Verein Deutscher Eisenhuettenleute at Dortmund, one of the principal papers presented was that of O. Klatte of Neuwied, describing his method of rolling weldless chains. Klatte started with the plan of doing the shaping in the rolls and removing the fins and connections between the links by means of punching. He adopted at the outstart of using a mill with four rolls to act simultaneously upon a cross shaped bar. Believing that the shaping of the links could not be accomplished with the use of solid rolls, he experimented first with rolls built up by bolting together a number of plates.

The mill proper, as originally designed, is shown in Figs. 1, 2 and 3. Klatte started originally with a square shaped link but finally adopted a round link. In order to prevent pounding of the rolls he adopted the design of roll shown in Fig. 4. The shaft carries a fixed gearing disk and a loose gearing disk coupled by bolts. Between them is the roll proper bearing the grooves. The roll consists of a ring which bears on its periphery a series of sections attached by dovetailing, as at *b*, and by

keys at *d*. These sections carry the grooves. They may be easily changed. In order to allow of a quick and certain adjustment of the rolling surfaces to one another, an eccentric arrangement, shown in Fig. 5, is provided. Small adjustments may be made by means of the plate and holes shown. The rolls are made of steel and the grooving is done by special milling tools. The steel becomes hardened very rapidly. When it becomes necessary to deepen the grooves the rolls are mounted on a frame and while slowly revolving are carried up to a red heat. Thus annealed they may be easily milled.

The great problem in rolling chain shapes from a cross shaped rod was to fill the grooves properly. This was accomplished by providing cavities, which Klatte calls equalizing grooves, into which the surplus material is forced. The action of the grooves is shown in Fig. 6, which represents a top view of the rolls, with the top roll removed. The triangular bodies show the equalizing grooves. Klatte suggests that they might be used to produce some by products, like balls, or parts of sewing machines or locks.

It is stated that the rolling may be done at high speed, 12 feet a second having been done. Klatte suggests that the billet be rolled down first to a form preparatory to a cross, on a three high train, in lengths of about 50 feet. After reheating the bar is put through a continuous mill of four-roll trains to get down to the cross shape desired for the finishing mill. The bar, from 100 to 140 feet long, is then put through the chain rolling train. Klatte states that slow rolling, according to his experience, makes a neater product. The chain rod thus rolled is taken to punching machines, which remove fins. Then the rod is heated and is either put through a train of rolls to separate the links, and the latter are rolled into final shape, or the links are singly or in groups put into shape by presses. Klatte gives the results of a series of tests made by the German Testing Bureau at Charlottenburg to show the quality of the weldless steel chains.

The Naval Ordnance, Construction and Steam Engineering officials have completed their plans for the three new torpedo boats authorized by Congress, and it is expected that advertisements for bids will be issued shortly, and the construction of the vessels be begun this year. The new boats are limited as to price to \$150,000 apiece, including armament, and a speed of 24.5 knots will be required to be guaranteed by the contractor. They will be rather larger than the "Ericsson," but will follow the general plan of that torpedo boat, except that the propellers will be fixed abaft the rudder. Their general dimensions are as follows: Length load water line, 160 feet; beam load water line, 16 feet; draft load water line, 5 feet; displacement, 135 tons; indicated horse-power, 2000; speed in knots, 24.5; coal capacity, 50 tons. No premium can be given for excess speed under the provisions of the new law.

Work is being vigorously pushed at the great magnetic ore concentrating plant under construction by Thomas Edison at Ogden, N. J. We are informed by Mr. Edison that he expects to start early in October. The plans are laid out for mining about 5000 tons per day of ore carrying about 27 per cent. of iron. It is expected that the

product will be about 1700 tons of briquetted concentrates. Hoisting and delivery to the mill are done by overhead traveling cranes. The ore is first crushed by one enormous set of rolls, followed by one large set and three

nace to a temperature of about 500° F. We understand that the tailings are to be brought down to 1 per cent. iron. The whole enormous plant has been laid out with special reference to automatic work and low labor cost. It is estimated

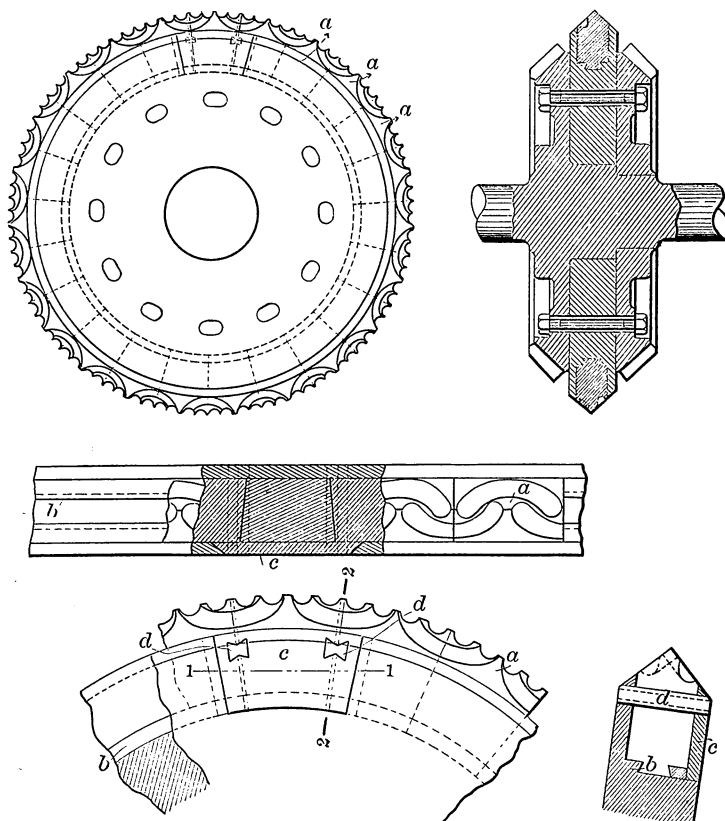


Fig. 4.—Chain Roll.

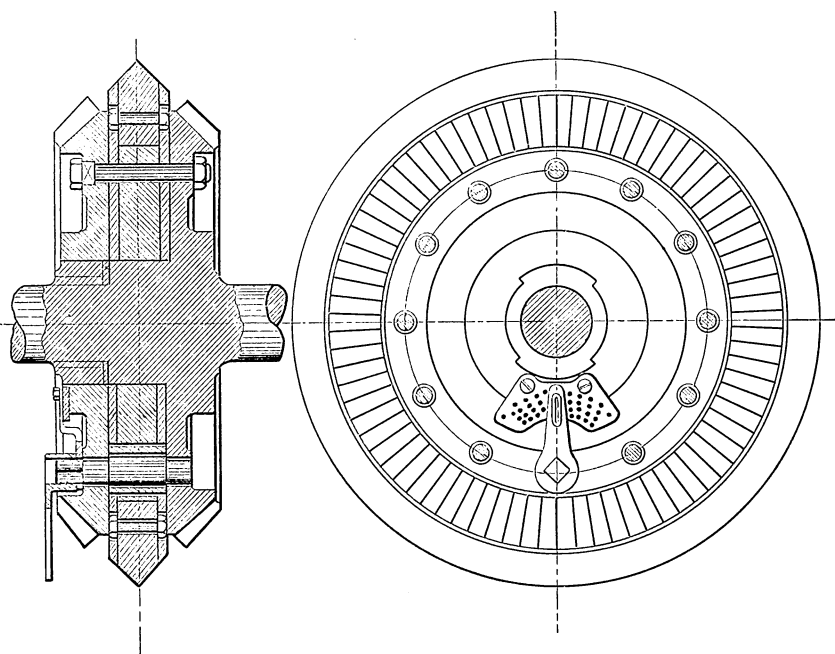


Fig. 5.—Eccentric Roll Adjustment.

THE KLATTE CHAIN ROLLING MILL.

smaller sets. There will be about 450 magnetic separators, Mr. Edison now following the principle of working three streams of ore. The concentrates are made into briquettes in machines of special design, 14 being in place. Ultimately the number will be 40. The cementing material is rosin and the briquettes are exposed in a special fur-

that there will be only 33 men in the whole mill and that the mining will employ 72 men.

Realizing the demand for a comprehensive presentation of the new tariff in handy form, F. B. Vandegrift & Co., 27 William street, New York, and 50

South Fourth street, Philadelphia, have issued a Hand Book of the United States Tariff, containing the Customs Tariff act of 1894, with complete schedules of articles, with proper rates of duty; also a full explanation of customs requirements, and of the laws and regulations regarding drawback, with a list of articles on which drawback rates have been established. The decisions of the courts, general appraisers and Treasury Department are also given, as

the fuel bill for that train increased \$100 per month with the same engine and men, and when the running time was changed back to four and one-half hours the fuel record at once dropped to its old figures.

Lackawanna Steel.—During a recent visit to the South Works of the Lackawanna Iron & Steel Company, at Scranton, Pa., we had occasion to wit-

For the New York Central & Hudson River Railroad, the Lackawanna will make this year about 60,000 tons of rails. The following analyses show the quality of the steel made for 100-pound rails:

	1.	2.	3.	4.
Carbon.....	0.635	0.636	0.643	0.646
Silicon.....	0.117	n. d.	0.132	n. d.
Sulphur.....	0.063	0.069	0.068	0.067
Phosphorus.....	0.053	0.053	0.051	0.053
Manganese.....	0.82	0.90	0.86	0.99
Copper.....	0.436	n. d.	0.392	n. d.

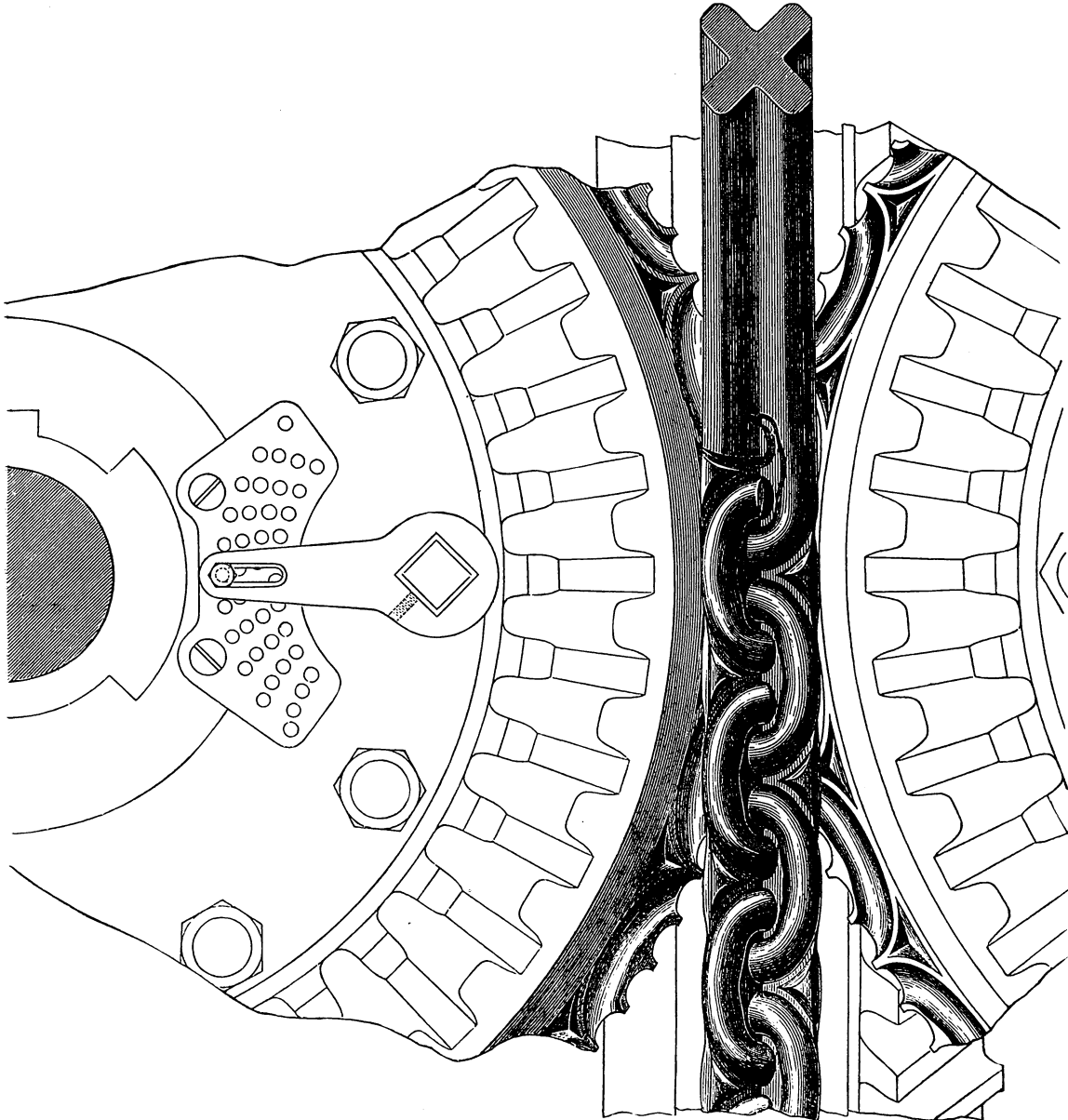


Fig. 6.—Top View of Chain Rolls, Showing Grooves.

THE KLATTE CHAIN ROLLING MILL.

well as a table of foreign coins with values as proclaimed by the Director of the Mint; a foreign express tariff; the administration law, and other law on the administration of the customs service.

As showing the effects of high train speed on coal consumption the following report made by a committee of the American Railway Master Mechanics' Association at their late convention is of interest: "The time of a train scheduled to make 100 miles in four and one-half hours with six cars and 27 stops was reduced to four hours, and immediately

ness a series of excellent drop tests of the rails then being rolled. As showing the quality of the material produced we collected the following recent analyses:

	1 D. L. & W. 80-pound.	2 D. L. & W. 80-pound.
Carbon.....	0.576	0.580
Silicon.....	0.154	n. d.
Sulphur	0.069	0.064
Phosphorus	0.058	0.057
Manganese	0.93	1.00
Copper.....	0.325	n. d.

These two analyses represent 51 and 27 heats respectively on Delaware, Lackawanna & Western 80 pound rails, made on August 1 and 2.

The first analysis represents 56 heats on August 16, the second 19 heats on the 17th, the third 59 heats on the 17th, and the fourth 28 heats on the 18'h.

At the time of our visit the mill was running on 63½-pound rails for the Georgia Central, the rail steel showing the following analyses:

	1	2
Carbon	0.490	0.439
Silicon.....	0.135	n. d.
Sulphur.....	0.072	0.068
Phosphorus.....	0.064	0.068
Manganese.....	0.90	1.00
Copper.....	0.339	n. d.

The first analysis represents 36 heats of the night turn, August, 22, and No. 2 27 heats on the 23d.

Safety of Travel on the New York Elevated Roads.

After quoting what the *Railroad Gazette* said some time since of the possibility of fast speed and frequent trains, without block signals and with great safety, on the New York elevated railroads, the writer in the English journal says:

"This paragraph wants completing by the statistics of injuries to passengers from causes beyond their own control."

Our contemporary answers this as follows:

"In order to complete the paragraph we will give a few statistics; we believe that they are unprecedented in the records of operation of steam railroads, and we are satisfied that they are quite authentic. For the ten years ending June 30, 1894, the elevated railroads of New York City carried 1,744,230,127 passengers, an average of 477,609 a day. This vast traffic was carried without killing a single passenger on a train from causes beyond his own control; and, so far as we can discover from an examination of the records, there was no injury, either fatal or otherwise, to passengers disembarking from the cars. The only fatal injury to a passenger riding on the cars seems to be one entered as a head projecting out of car window. Three passengers were killed and two injured while attempting to board moving trains. Only eleven injuries, and these mostly slight, are charged to collisions, an average of 1.1 a year. This solitary item is the only one of real interest in connection with the query presented by our contemporary, for the others have no connection with collisions or train accidents of any kind as affected by the use or non use of the block system. The most serious accident on the elevated roads during the period named was the pushing of a number of passengers off the elevated structure to the ground on the occasion of a great fire which occurred several years ago. Many trains were compelled to stop and wait some time between stations, and the passengers, contrary to the rules, got out and walked along the narrow employees' platform at the side of the track. While this platform was crowded a passenger attempted to board a slowly moving train, and in doing so was unable to either get into the car or get back to his position on the platform, and his projected body knocked a number of persons into the street. Four of these were killed and seven injured. The list of casualties contains an item of one passenger injured by being pushed from the station platform by a crowd. Having reference to the duty of police protection the company might be deemed guilty of contributory negligence in a case like this; and, taking an extreme view, the preceding item might perhaps be thought by some to belong in the same category. But after thus giving full weight to the most unfavorable items, we still have an extraordinary record for safety. The total number of fatal injuries of all kinds for the ten years was 41, and of non-fatal, 38. The deaths include nine suicides, and the totals include intoxicated passengers and all the usual cases which are practically unpreventable."

Yarrow & Co., the Thames ship-builders, who built the fast torpedo boat destroyers, "Hornet" and "Havock," for the British Government, have taken a contract from the Russian Government to build boats of the same kind to steam 29 knots.

A New Drawn Steel Trolley Pole.

The United States Projectile Company of Brooklyn, N. Y., who are the manufacturers of the hot pressed motor pinion, which has met with such marked success, have, after much experimenting, perfected a decided improvement in trolley poles. Their process is unique and original. They are made in the same way that they make their bicycle tubing and of the same material. The pole is started from a solid block of steel $3\frac{1}{4}$ inches in diameter and 7 inches long, which is gradually drawn out until it is the standard length, i.e., 12 to 13 feet, and is then tapered, making a very neat looking pole, very smooth and clean. The steel used being a fine grade of Swedish, very tough and strong, the poles are lighter than those

The Cross Steam Engine.

The Cross engine, as may be seen by the accompanying drawings of the several parts, consists of four cylinders placed radially and at equal distances apart from a common shaft. There are two cranks and to each crank are attached two diametrically opposite piston rods whose pistons receive steam only in one direction, or toward the center. The pistons, together with the base carrying the engine, are formed of one casting, as shown in Fig. 1. The valve is a disk, Fig. 5, formed with openings to provide for the proper admission and exhaust of the steam. This valve rests upon the seat, Fig. 3, being held in position by the cover

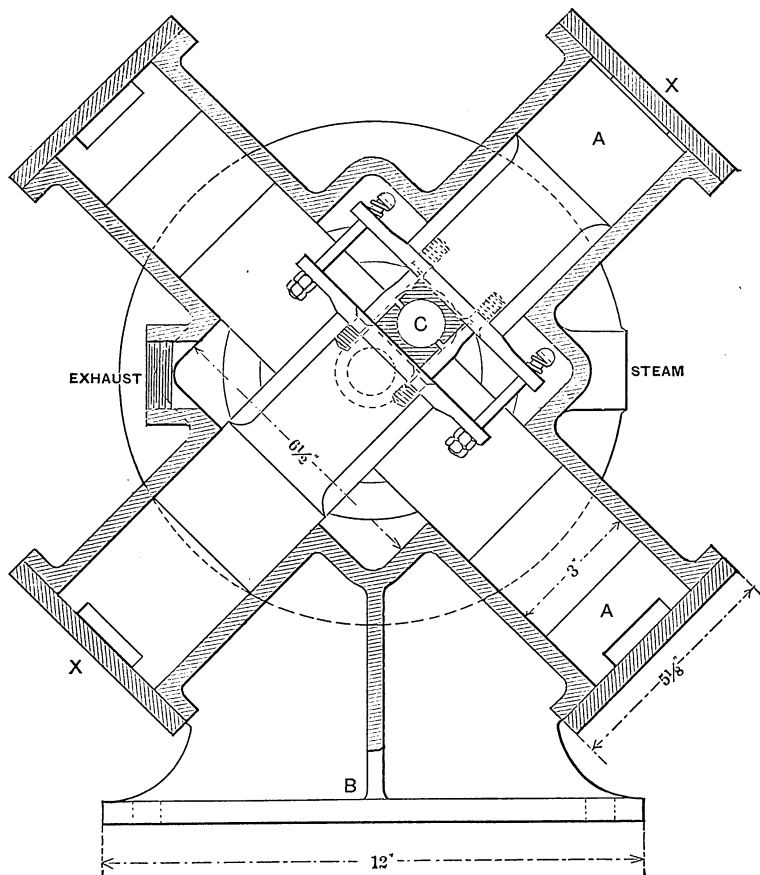


Fig. 1.—Section Through All Cylinders.

THE CROSS STEAM ENGINE.

now in use and are much stronger. This alone is quite an item, as it relieves the tension on the wire just this much, which will certainly make the life of the wire greater. The Brooklyn Heights Railroad, which is probably the hardest road on trolley poles in this country on account of the elevated structures, report that while with the common poles they often have a breakage of from six to ten a day, with these poles during all the time they have used them, which is now about six months, and they have upward of 200, only one pole has been broken so that it could not be used again. On account of the tough and tenacious material which the poles are made from, a bent pole is very easily straightened without injuring the metal.

The Turkish Government is about to rebuild Solomon's water conduits, at Jerusalem, at a cost of \$400,000.

plate G, Fig. 4, and adjusted so as to make the proper fit by means of the screw shown in Fig. 4. The valve disk is keyed to the shaft to turn with it. The valve disk is balanced as the steam does not at any time bear against it, but against the back plate. To understand the operation of the engine it is only necessary to follow the various steam passages. Referring to the disk, Fig. 5, L is the inlet port and M the exhaust port. Referring to Fig. 2, the steam from F passes through the port L in the disk to the passage E to the outer end of the cylinder A. At the same time the exhaust from the opposite cylinder has taken place through the passage E' and the port M in the disk. The exhaust steam, with its contained oil, passes to the interior of the casing where it serves to lubricate the crank and working parts as well as the main shaft. As the reciprocating parts are perfectly balanced the engine is capable of high speed and it may be

applied direct to dynamos and other machines requiring quick revolution. The engine may be made practically frictionless, as far as its valve mechanism is concerned, by properly adjusting the screw holding the disk valve in place. The engine is made by the Cross Engine Company of 109 Liberty street, New York.

The Iron Industry of Northern Spain.—The British Consul at Bilbao, Northern Spain, in his annual commercial report to his government for the

rich iron ore mines, as may be deduced from the fact that in 1893 of a total production in Spain of 5 497,540 tons, the consular district of Bilbao was responsible for 4,918,650 tons; while in 1892, out of a total for Spain of 5,405,170 tons, the consular district of Bilbao furnished 4,673,560 tons. The exportation of iron ore from Bilbao to the United Kingdom in 1893 was over 3,000,000 tons, and, as the total foreign import of iron ores into the United Kingdom was 4,065,863 tons (3,624,083 tons from Spain and 441,780 tons from other countries), it appears that shipments of Bilbao ores made up 84 per cent. of the importation from Spain and 75 per cent. of the total foreign importation of iron ores into the United Kingdom in 1893; and, calculating the yearly production of iron ores in the United Kingdom to be 14,000,000 tons, it would appear that Bilbao supplies about the fifth part of the iron ores yearly consumed in the United Kingdom. With regard to the output of iron ore in Biscay, and the very considerable quantities exported for the last 16 years at the rate of 3,000,000 tons to 4,000,000 tons per annum, the question has often been raised as to how long the mines may be expected to continue this yield. This is certainly a matter very difficult to forecast, but it may be observed that

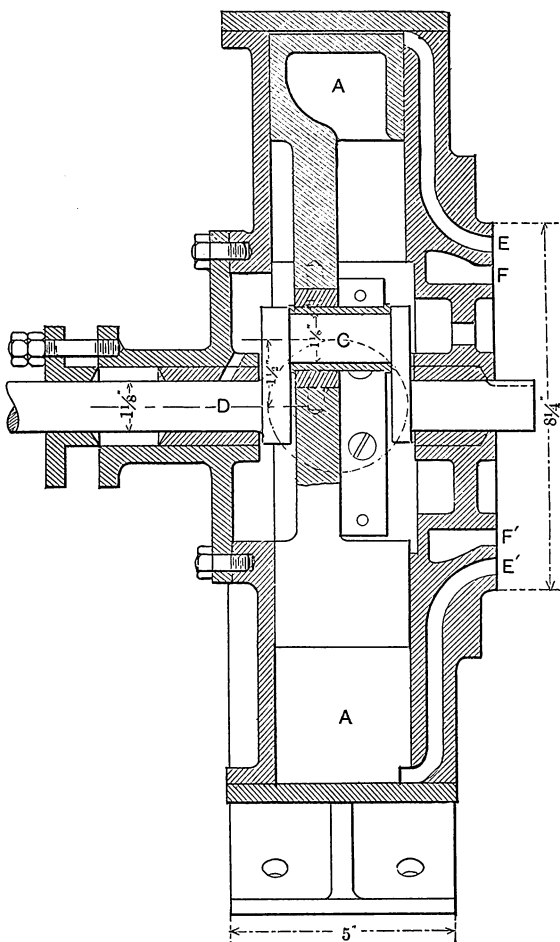


Fig. 2.—Section Through Two Cylinders Parallel with Shaft.

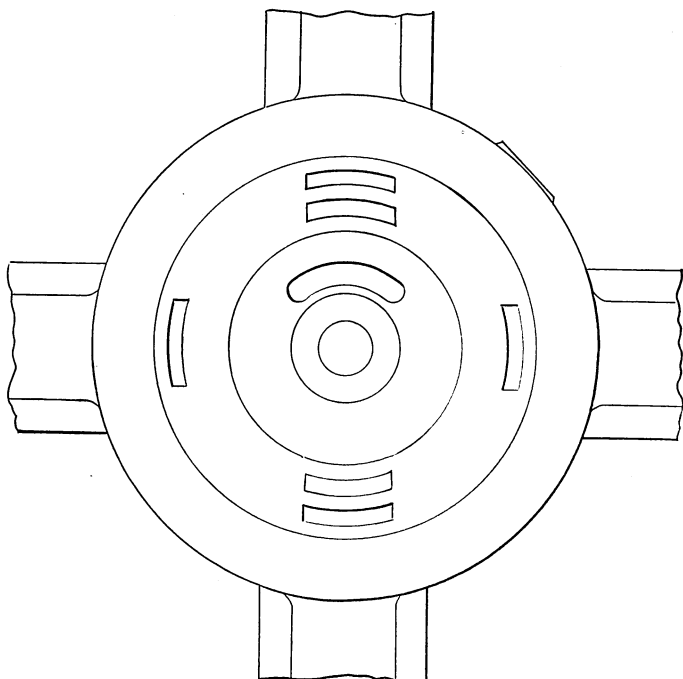


Fig. 3.—Valve Seat.

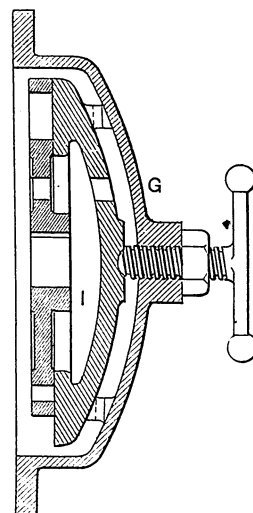


Fig. 4.—Section Through Valve and Cover Plate.

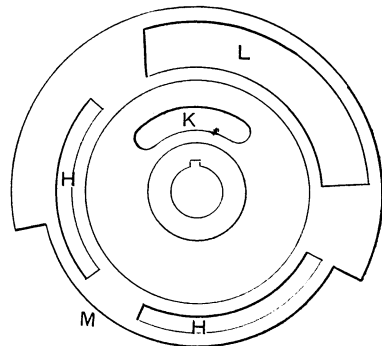


Fig. 5.—Disk Valve.

THE CROSS STEAM ENGINE.

ism is concerned, by properly adjusting the screw holding the disk valve in place. The engine is made by the Cross Engine Company of 109 Liberty street, New York.

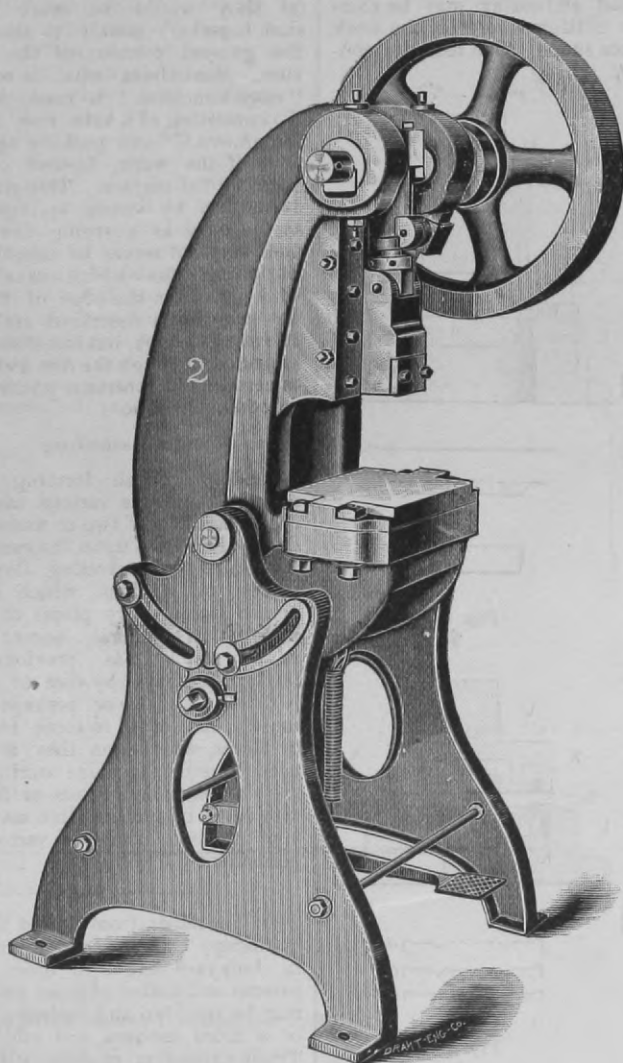
year 1893, gives the following facts relating to the iron mining industry of Spain, with special reference to the Biscay district: The province of Biscay gains very considerable profits from its

the number of mines yielding good quality ores is becoming smaller, with the inevitable result that in the course of time the exportation will decrease and the quality deteriorate.

No. 2 Adjustable Power Press.

The development and general introduction of the power press began with the invention of an efficient automatic clutch, a device which made it possible to engage a loosely running fly wheel by means of a treadle, with a crank shaft for one revolution only, and stopping the press automatically at the highest point of the stroke. A large variety of designs have since appeared, which, however, may be classified into two kinds: 1, Those having the crank shaft run from front to back, generally known as punches or punching presses;

The shaft is made of forged steel, journaled in removable liners, provided below with an adjustable shoe. This feature, which is referred to as entirely new on presses, supplies means for taking up the wear and for truing up the shaft by turning down in case of cutting or excessive wear. Only a new set of liners are required in the latter case. The connection consists of an exterior part of large diameter embracing and clamping an inner sleeve, made of steel, through which passes a stem with a wrist at the lower end having a wide bearing in the slide. For adjusting, only small light wrenches are required.



No. 2 ADJUSTABLE POWER PRESS.

2, those having the crank shaft running parallel with the front of the operator, known generally under the name of open back presses. Later on another feature was added to this class of presses by some builders—an arrangement to incline them. Since then these presses have frequently been termed “adjustable” or “inclinable” presses. This addition makes these presses preferable for die work, in which the work does not fall through the dies but is ejected from them. The press being inclined, it will slide down merely by force of gravity through the open back. The illustration herewith represents a line of presses of the latter kind, manufactured by Rudolphi & Krummel, Chicago, Ill. The frames or bodies of these presses are designed on the straight line principle, the points of pressure being connected by metal, arranged in straight lines as much as possible, thereby gaining strength and producing a frame of pleasing outlines free from detrimental curves and kinks.

The slide is guided in scraped, adjustable V gibs of extra length. The clutch is the so-called Johnson clutch modified. It consists of a solid piece of round tool steel, flattened and hardened on the end. The clutch can be taken apart instantly by sliding out the wheel on the shaft. Two or three locking points are provided in the wheel. A knock out, not shown in the cut, is provided on these presses for combination dies. It is carried in the slide and is adjustable from the front of the press. The adjusting of the press from upright to incline is done on smaller sizes by means of a geared segment and pinion; on larger ones the pinion is replaced by a worm. A few turns of a crank will accomplish it. The illustration shows the No. 2 press. The manufacturers wish to call attention also to the unusually large die space, both as to height and depth, which these presses have. Four sizes are being built at present, the smallest one being a bench press.

Press Working of Sheet Metals.—V.

BY OBERLIN SMITH.

Bending Processes.

Following a natural order, we come next to forming or bending processes, where the metal has its surfaces pushed out of their original planes into some new shape, but where the thickness is supposed to be not materially altered, except where it is incidentally made thinner in certain spots by being stretched, &c. In Fig. 57 is shown a V shaped pair of bending dies and beneath them a straight plate of metal, *a*, together with the same as it appears after bending, at *b*. The dotted line *b'* shows where the dies tried to bend it and the black line *b* its final position as assumed by its own elasticity.

In Fig. 58 is shown a pair of bending or forming dies which are removed one step further from the simplicity of the first named, giving two bends to the work instead of one. Here the same difficulty occurs in regard to the edges springing part way toward their original shape after leaving the die, as shown again by the lines *b b'*. It is not therefore possible with a die of this kind to produce edges which are exactly square with the main body of the plate. An approximation may, however, be sometimes made by bulging upward the horizontal surfaces of the dies, as shown in Fig. 58, to an extent not greater than is suited to the elastic limit of the particular pieces of metal used. The die therefore attempts to make the work somewhat concave upon the bottom, which forms the corners at a sufficiently acute angle to approximately counterbalance the tendency to spring open; so that when the bottom has sprung back flat the edges will stand up perhaps nearly enough at right angles thereto.

Forming Processes.

In Fig. 59 is shown a pair of round forming dies, where a flat circular blank, *a*, is laid in the recess *m*, which acts as a gauge merely for locating it centrally. It is then pushed by the upper die, or punch, *U* through the parallel opening *n*, and falls beneath the dies—being stripped off the punch when the same is ascending by the sharp stripping edge *o*. At *b* is shown the shape of the work when in a half way stage of the operation, its final condition being as at *c*. With dies of this kind the edge of the work cannot be very deep in proportion to its diameter, on account of the wrinkles which evidently attempt to form when the circumference is reduced. It is true that these incipient wrinkles can be somewhat smoothed out by allowing the punch and die to fit tightly enough to confine the metal to its original thickness—providing this thickness came uniform, which it usually does not in practice. In doing this, however, the metal of the edge is lengthened in certain spots in a vertical direction, which causes a jagged edge. If the depth is too much increased the wrinkles so fold upon one another as to tear the metal entirely away at certain places.

With cylindrical work like that in question, and also with elliptical work (which resembles it by having a convex contour with an edge extending all around) the outward springing of this edge does not occur to an objectionable degree, as it does with rectangular work

having two separate and unconnected edges, like that shown in Fig. 58. This is because the edge *c* forms itself into a hoop, as it were, to confine itself from moving outwardly, which it cannot do when released from the die without actually stretching in a circumferential direction; and this evidently can occur but in a very slight degree.

In Fig. 60 is shown a pair of forming dies for turning an edge upon an internal instead of an external circular contour. These take a perforated blank, *a*, and open out the hole, turning it downward into a cylindrical shaped edge, as at *b*. If an attempt is made to get this edge too wide certain cracks will appear, as at *c*, &c., in the picture.

file line. This is shown by the section of the piece of embossed work, *b*, which is longer in profile than is the blank from which it was made, *a*. In the case given I have represented a pair of circular dies with two annular grooves sunk in *L*, corresponding ridges projecting from *U*. This is a design sometimes used upon the heads of tin cans, &c., its object being partly to make them stiffer and perhaps partly for ornament.

Embossing and Cutting.

Almost all the various processes of forming and embossing may be combined with cutting wherever the work is of suitable shape. The tools for con-

tendency to crack, as in *c*, Fig. 60, although in practice it is not made deep enough to produce this effect. Such action does not take place in *a'*, because the stretching action is resisted by the continuous surface in the center, which is retained in the case of this can bottom by removing the central cutting punch *d* from the upper die. Should a plain flat bottom be desired, as at *a''*, the embossing punch *e* is also removed.

A knockout ring is shown in upper die at *K* and in lower die at *K'*. They are unnaturally given in closed position (as they would be were the dies shut together) merely to show better the general contour of the sectional view. Sometimes what is called an "edge knockout" is used, instead of *K'*, consisting of a thin ring rising in the groove *K'* and pushing against the edge of the work, instead of underneath its flat surface. This ring *K'*, if driven up by strong springs, acts in some degree as a spring drawing attachment and serves to smooth out the slight wrinkles which usually otherwise appear in the edge of the work. The knockouts described are generally driven by springs, but sometimes by pins extending through the dies and attached to or pushed by certain positive action knockout devices.

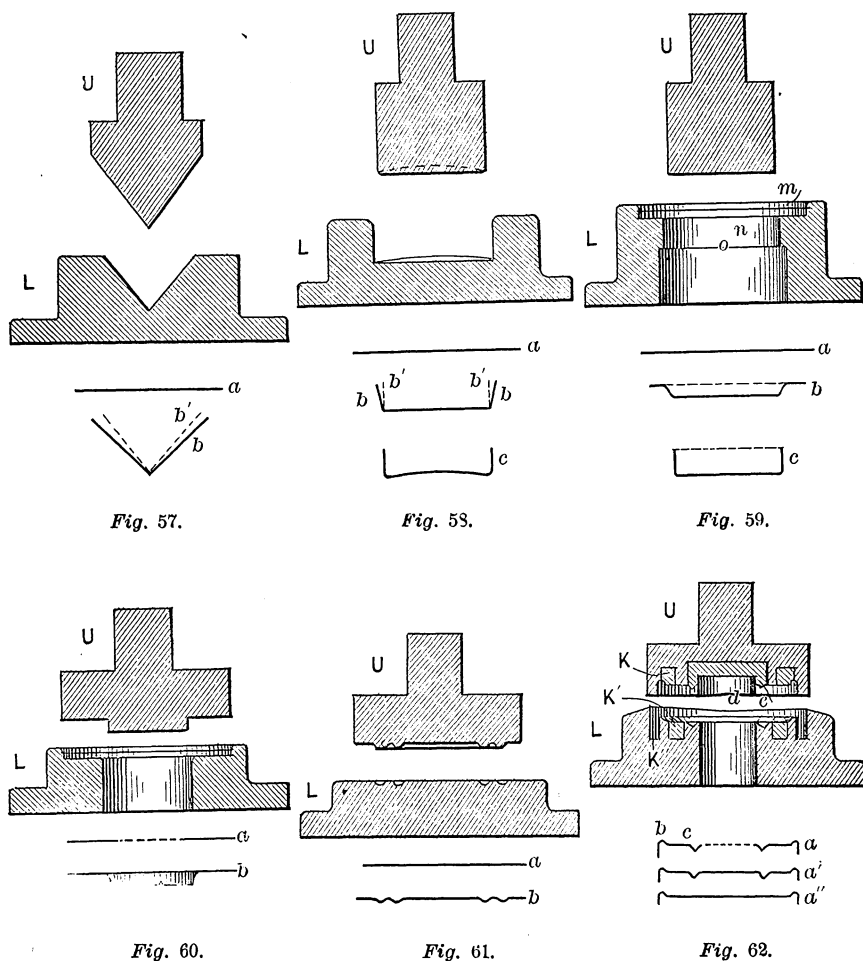
Assembling.

Analogous with forming processes proper, there are various cases where the assembling of two or more pieces is done, oftentimes upon the same general principle as the riveting down of an eyelet, or a rivet, which has been passed through two pieces of paper or metal. In general, some piece of metal which has previously been brought to shape by dies or otherwise is driven tightly, or perhaps dropped loosely, into or on to some other piece or pieces, whereupon they are all fastened together by some auxiliary forming process which bends or forms certain edges or surfaces in a manner best adapted to locking the various pieces permanently together.

On her return from abroad the cruiser "Chicago" will be immediately placed in dockyard hands in order that her present antiquated engines and boilers may be removed and replaced by others of a more modern and efficient type. Triple expansion engines, with a pressure of 160 pounds, will be fitted in the vessel, one third of the pressure being furnished by ordinary marine cylindrical boilers, and the remainder by water tube boilers, similar to those used in the "Monterey." The new machinery will give about 8500 horsepower, or 3500 horse-power more than at present, while the speed of the ship will be increased from 15 knots to about 18 5 knots thereby.

Dreifus, Black & Co., iron and steel brokers of Pittsburgh, Pa., have, says the *Dispatch* of that city, secured 10 acres of land at New Kensington, Pa., for a site for a black plate and tin plate mill. The equipment will, it is reported, consist of four hot and four cold rolls and a tinning set of ten stacks. About \$250,000 will be invested and work will be commenced at once on the construction of the mill. Employment will be furnished to 300 men.

Great loss of life and property has been caused by floods in Mexico.



PRESS WORKING OF SHEET METALS.

Embossing.

In Fig. 61 is shown one type of a pair of embossing dies, so called. The word "embossing" is used in this treatise, and very generally in the sheet metal trades, to denote a small degree of forming or bending at various points upon the surface of a piece of sheet metal, the location of which usually tends to show in top view a figure or design of some kind, decorative or otherwise, as for instance pictures, symbols, lettered inscriptions, &c. In such work the metal is pushed downward or upward more or less at various points into ridges and grooves, but not to a sufficient extent to tear it apart. The tendency is evidently to so tear it, as its outer edges are maintaining a rigid resistance against inward flow (except in certain forms of the drawing process) and the metal has therefore to elongate where forced to take a shape whose cross section shows a longer pro-

ducting such operations are usually termed "combination dies," although the term is not very definite, being sometimes used, as before described, for the combining of two or more sets of cutting edges. In Fig. 62 is shown in vertical axial section a pair of combination dies such as are very extensively used for producing fruit can tops, as shown in section at *a*, and bottoms, as shown with embossed groove *a'* or plain at *a''*. In practice these dies are assembled in separate pieces to some extent to insure cheapness, durability and facility of repairs, but they are here depicted in conventional form. It will be seen that the outer cutting die has the female at the bottom as well as the inner one. In this case the latter part of the upper die's descent cuts the central hole, while the forming of the edge at *b* and the embossing of the groove at *c* are taking place. It will be noticed that the turning upward of the inner wall of this groove causes a

THE WEEK.

New York wool importers are preparing to make their city the great wool center of the country, now that free wool is in sight. With this end in view the New York Wool Warehouse Company are beginning the construction of a big building, at West Broadway and Beach street, for the housing of wool, a wool exchange, a wool bank, and a wool club. The New York Wool Exchange is now being organized, as well as the New York Wool Club, both of which will soon be in operation. The new building, which will be a handsome structure of 11 stories, is expected to be ready for use by next February.

B. Petropavlosky, one of the engineers in charge of the construction of the great trans Siberian railroad, has arrived in San Francisco on his way to Russia to report on the progress of that undertaking. He will examine the railroad systems of the United States and Europe on the way, in order to gain useful information for the benefit of his own work.

Warehouse accommodations in Baltimore are entirely inadequate to meet the enormous quantities of tobacco that have recently been sent to that city.

The new Southern Railway Company, who on August 1 commenced business as successors to the Richmond & Danville and East Tennessee, Virginia & Georgia railways and their allied lines, will operate in all some 7000 miles of roads. Starting under strong and able management the new system promises to be of great advantage to the people of the South.

English shareholders of the Chignecto ship railway of Canada having subscribed \$1,500,000, it is hoped that the work may yet be completed. A provisional contract to furnish the railway has been awarded, contingent on the desired extension of the time by the Government.

The statement of the "Sault" Canal for the past year, recently issued, shows that the business of this season has been 5,096,033 tons, being 17,000 tons less than that of last year. In July the total freight tonnage was 1,637,618, against 2,017,000 tons in July of the previous year, the latter having been the heaviest month's business known in the history of the canal. The greatest increase this year has been in ore, of which 3,077,000 tons has been carried, as compared with 1,928,000 tons last year, while the main decrease is shown in coal and wheat, which have fallen off 60 and 50 per cent. respectively. Lumber to the extent of 326,000,000 feet has passed this season, being 77,000,000 feet more than the figures of last year.

The returns received at the office of the Controller of Currency at Washington of the amount of gold held by the National banks of the United States in July show that the New York State banks held \$30,104,000, or \$25,000,000 more than the gold reserve of the Treasury. The next three States on the list are Illinois, with \$26,406,000; Pennsylvania, with \$21,296,000, and Massachusetts, with \$11,915,000.

Pacific Coast journals chronicle a sensible improvement in local trade during the present month. The San Francisco *Bulletin* mentions the fact that eight wheat cargoes had been cleared from that port during the first

half of the present month, against only one in July, one in June and four in May, while 11 ships were in port under engagement to take grain and canned goods to Europe. Altogether, the prospects are regarded as favorable for a satisfactory revival of the export trade of the port.

Continued wet weather has caused much damage to the crops in many parts of Europe. Harvest prospects, both in Great Britain and on the Continent, are reported as unfavorable.

A new railroad from St. Louis to Norfolk, Va., is spoken of.

A St. Louis special reports that the right of way has been purchased for a new belt line road, to be known as the St. Clair, Madison & St. Louis Belt Railway. The road is to run within a radius of 25 miles of St. Louis. The work of laying the tracts in Missouri will be begun at once.

Another New Jersey trolley system is projected. It is to run from Camden to Trenton, taking in all the intervening towns.

The palatial headquarters of the Knights of Labor in Philadelphia, having been found too expensive to maintain, has been given up. It will, by a strange irony of fate, be opened on Labor Day as a conservatory of vocal and instrumental music and so harmony will prevail in the place which has of late witnessed so much wrangling and discord. Washington, it is said, will be the future headquarters of the organization.

Secretary Carlisle has reversed his first ruling in regard to the admittance of bonded goods placed on the free list of the new tariff law, by which ruling such goods would have either to pay the McKinley duty or be exported and reimported. He now directs that these goods be admitted duty free, although placed in bond previous to the enactment of the new law.

Taken as a whole, says a Western crop report, the wheat crop of Minnesota and North Dakota is one of the largest ever harvested, nearly equaling the big crop of 1892.

Only four out of the 42 Fall River textile mills are in operation. The owners and operatives remain widely apart on the wages question. At New Bedford the situation is improving, about one-third of the total capacity being again at work.

Congress adjourned on Tuesday, to the intense relief of the country at large.

The level-headed business men of Colorado are making a strong effort to shake off the Populists, who have misgoverned their State since the advent to power of the present ridiculous Governor. A Denver dispatch says that 150 business men of that city, including smelter managers, bankers and wholesale merchants met recently and issued an address to the business men of Colorado. The address urges them to join in a movement to regain the confidence of Eastern financial circles by securing the defeat of Governor Waite and the Populist party in the coming State elections.

The Ellwood Ivins Tube Company, whose mill is located at Oak Lane Station, Philadelphia, have recently perfected a process by which they are

making the highest grades of tool steel into seamless and weldless tubes. This it is claimed has never been accomplished in this or any other country. This mill has, of course, been making for some time weldless tubes from mild steel (principally Swedish) as do others in England, but tool steel is quite another matter. This steel takes the finest cutting edge, and can if desired be hardened to a temper that will readily cut glass.

OBITUARY.

DAVID D. MICHAELS.

David Dundas Michaels, one of the oldest financial and commercial writers in Chicago, died at his residence in that city on the 22d inst., after a long illness. He was born in Albion, Edwards County, Ill., when that county included Cook County, August 22, 1825, and died on his birthday. His parents came from Maine and settled at Albion. In 1859 he removed to Chicago, where he remained for 35 years. He was one of the first to compile market reports and his work has been continued in the financial and commercial world up to within a short time of his death. There are few men who were as thoroughly posted regarding the agricultural and industrial development of the country. He naturally took great pride in the growth of the business interests of Chicago and enjoyed intimate acquaintance with the heads of prominent houses in all lines. Of late years he had been the Chicago correspondent of the New York *Evening Post*.

PERSONAL.

Cyrus Elder of the Cambria Iron Company, Johnstown, Pa., has sailed for Europe.

John W. Davis, manager of the Aschman Steel Casting Company for the last two and one half years, has accepted a position with the Cleveland Steel Casting Company as superintendent of their plant, to take effect September 1.

H. C. Frick of Pittsburgh is expected to return from Europe toward the middle of next month.

Erskine Ramsay has been appointed superintendent in addition to his former position of mining engineer of the Pratt Mines Division of the Tennessee Coal, Iron & Railroad Company, with the title of "superintendent and mining engineer." The change took effect on August 17.

A dispatch from Washington to the New York *Herald* says that the Board of Engineers appointed to report on the proposed Hudson River Bridge have declared in favor of a suspension bridge, with length of span 2000 feet, as the safest and most practical for a railroad bridge between New Jersey and New York City.

On Monday of this week the Bessemer department at the South Mill of the Lackawanna Iron & Steel Company, Scranton, Pa., made in 12 hours 68 heats, or making 615 tons of ingots. During the 24 hours 1166 tons of ingots were produced, while the rail mill bloomed and roughed, with one engine, in 12 hours, 541 tons of ingots.

The Iron Age

New York, Thursday, August 30, 1894.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - BUSINESS MANAGER.

Improving Trade in the West

The West reports considerable improvement in general trade. Merchandise of all kinds is in greater demand, and in some lines the prospects favor the largest movement for years. Railroad traffic has picked up remarkably, and on some lines a shortage of rolling stock is reported. The settlement of the tariff question is assigned as the main reason. The country has been kept bare of manufactured goods for a year or more, pending changes in duties, and now many merchants are disposed to return to their usual custom of carrying at least a reasonable stock, especially of such goods as are not affected by tariff changes. The strength of this impulse to trade cannot be estimated and opinions vary greatly. Some look forward to an immediate return of prosperity, arguing that an immense volume of business has been dammed up by the long prevailing uncertainty which will now precipitate a flood, with beneficial effects to follow for many days. Others, however, take a less sanguine view of the situation and think that the increased movement will soon spend its force, when trade will relapse into its old state of dullness. But no one can accurately forecast the future. Experience does not teach in this instance, because the conditions recently existing have been unparalleled.

If the improvement is permanent, and from this time forth business be restored to its normal condition, the entire nation will have reason to be profoundly thankful. Another winter like that of 1893-94 would bring even greater privations upon the unemployed, because savings have been more generally eaten up and the generous have less to spare to help their suffering brethren. A foretaste of what may be expected this winter if the hard times continue was given last week in Chicago. The Rock Island Railroad needed a moderate force of laborers to begin work on elevating their tracks, but on the day advertised the foreman in charge was dismayed to find a mob of several thousand men in waiting for a job. They became so riotous when not employed that it was necessary to call for a large number of policemen to prevent them from doing violence to the fortunate few who had been put to work. Further, the destitution among Pullman strikers has been so great, and their trades union *confères* have been able to do so little for them, that the Governor of Illinois felt impelled to issue a proclamation asking for assist-

ance in their behalf in the name of humanity. Every industrial community is carrying a burden of this character to-day, and a revival of business cannot come too soon to bring relief.

Government Inspection.

While no one has ever accused Army or Navy officers in charge of inspection of material purchased by the Government of fraudulent practices, it is clearly stated by the House Committee, which has investigated the armor plate trouble that some of them have been negligent. Manufacturers have openly charged them with being incompetent. We do not propose to enter into the question whether either or both of these charges are true, because we feel convinced that as individuals the official inspectors are the victims of a ridiculously unsatisfactory system. We do not believe that officers of the army and navy are the proper persons to act as inspectors of war material. Even in its narrower sense their profession makes calls upon them so great and so varied that they cannot be expected to be experts in metallurgical products and processes. No one can expect a junior officer who may have been on a three-year cruise and who is suddenly dropped into a steel mill to do justice to his work, particularly if it so happens that he has never before been in a plant of that character. We know that it is uncongenial work to many of them, as work must be which is coupled with the feeling that full justice cannot be done to it.

If those who had finally become familiar with the duties were allowed to remain and were given an opportunity to guide and counsel the newcomers, there would be some chance that the best results obtainable would be reached. But this is not the case. A system of rotation prevails which is perfectly justifiable from the point of view of reaching maximum all-round efficiency with the officers, but is fatal so far as the best work in one particular branch is concerned.

The Government has so much work to do for a corps of inspectors that it would pay to have a body of civilians, well trained engineers, to whom it would be a life career. Probably in the case of the Navy they would form a part of the Bureau of Steam Engineering and Construction. A corps of trained, able and honest inspection officers could readily be collected among the large number of engineers who have for many years served in a similar capacity for private constructors. Their long experience enables them to judge which are the critical points in manufacture, so that they can watch the work intelligently. Many of them have a wide acquaintance among manufacturers, so that they have a good estimate of the personal factor of safety, which is worth more than columns of tests.

The manufacturers themselves, to

judge from private work, are far better satisfied when they are dealing with men who know their business well than when they must deal with official inspectors whose only guide is an unflinching adherence to the letter of the specifications, no matter what their spirit may be, or what results are obtained.

We believe that all parties would do better if the present system of official inspection were abolished and the work were placed in the hands of experienced civilians.

The Unending Labor Troubles.

The people of this country are more than surfeited with the steady succession of labor troubles. They are thoroughly disgusted with stories of more strikes after they had tried to make themselves believe that the industrial situation was definitely assuming something like a settled condition. No sooner does a great strike in one section of the country come to an end than a grievance is discovered in some important branch of business in another section, and straightway thousands are out of employment and other thousands find their trade disastrously affected. Strike news has become a permanent department of the daily press, and there seems to be no prospect of wiping it out. The efforts put forth by well meaning individuals to allay the widespread feeling of discontent among workmen is of no avail as against a few burning words from natural leaders urging united action in opposition to employers.

Unfortunately, the outlook is not reassuring in this respect. Prices not only show no indication of advancing, but in many lines will be reduced to meet changes brought about by the new tariff. Some labor organizations have had an understanding with the manufacturers that on the adoption of lower duties wages were to be adjusted accordingly. In such cases there is hope that an amicable settlement may be made and that a protracted and acrimonious dispute will be avoided. But there are some important branches of industry, as, for instance, the window glass trade, in which surface indications of a desire to try issues with employers are making their appearance. The irregularity of employment during the past 12 months and the approach of winter seem to have no effect on these unreasonable workmen, who not only injure themselves but hurt whole communities by such action.

It will be remarkable if the national commission for the investigation of the recent railroad strike, which has been sitting at Chicago, comes to a practical conclusion which will be of value in settling or preventing labor troubles. The testimony which has been submitted to them is merely of such a character as has already been fully set forth in the daily press. No really valuable contributions have yet been made to the store of information

on this subject previously in the hands of the people. But the members of the commission are men of great ability and large experience in public affairs, and perhaps they may be able from the study which they are now giving this most important question to evolve from their own clear understanding of the genesis of labor disputes a plan by which they may be avoided. If this can be done the commission will not have been appointed in vain, but they will deserve the commendations of a suffering public.

Washington News.

(From our Special Correspondent.)

WASHINGTON, D. C., August 28, 1894.

The tests of rapid fire guns made under the supervision of the Ordnance Board of the U. S. Army at Sandy Hook have been completed, but the report giving the results of these tests has not yet reached the Department.

The guns entered for competition were the Hotchkiss (French and American), Driggs (American), Sponsel (American), Maxim-Nordenfeldt (English), Skoda (Austrian, smaller caliber), Seabury (American), Schneider-Creusot (French).

The report will cover the following points: Number of parts of the breech mechanism, their strength, simplicity and certainty of action; the ease, certainty and safety of action of the breech mechanism as a whole; the action of the firing pin and extractor and the maximum outward position of the cartridge when pushed home by the breech block.

The firings were scheduled, the number of shots being for each gun: Fifty rounds at will; five rounds for velocity with full charge; ten rounds for accuracy at each range, 1000 yards, 1 mile and 3000 yards. The same conditions of aiming were applied at each round with each gun, and the same deviation was determined.

Three trials were given with each gun for rapidity, viz.—number of rounds in five seconds, and in one, three and five minutes, and time rapidity for 100 rounds. The condition of the gun was taken at the end of each 25 rounds in the last test. For rapidity with accuracy ten aimed shots from each gun were fired at 1000 yards and 1 mile targets. Ten aimed shots were fired at targets 500 and 1000 yards, alternately, and ten aimed shots alternately at 500 yards' targets placed about 75 feet apart. Each gun was then exposed to a blast of fine dust after which 25 rounds were fired from each as rapidly as possible. They were then tested with defective and excessive charges. The latter comprised five charges with gradually increasing pressures up to 45,000 pounds per square inch if attainable. The last five rounds were fired after the gun had been rusted.

It is understood that the report of the board will be very thorough and will fully set forth the qualities of the competing guns for rapid fire service in the field operations of an army.

The Ordnance Department is also awaiting the official report of the test of the chrome cast steel plate presented by the Midvale Steel Company, which was attacked by three 8-inch A. P. projectiles at 1552 f. s. and 1750 f. s.

The tests of the disappearing carriages

are also nearing completion unless something new should be offered. The Crozer-Buffington counter weight hydraulic cylinder carriage has been found the best rapid fire disappearing and more simple than any which have been presented for trial.

The long and patient Congressional inquiry into the doings of the Carnegie Steel Company in the manufacture of armor plate for the United States Government came to a conclusion on last Friday by the submission in the House by Mr. Cummings, its chairman, of the report, and a resolution recommended by the committee, which was also passed without a division, for testing 59 plates alleged to be defective. Mr. Cummings had some trouble at first in getting his report in, but the absence of the two minority members, Messrs. Dolliver and Wadsworth, and his statement that he had the permission of all the members of the committee to make a unanimous report facilitated his efforts to success. Representative William A. Stone of the Allegheny, Pa., district took up a line of defense of the Carnegie Company and in opposition to the report and resolution. He objected to the accusations contained in the report as a verdict reached before trial, although he did not object to the retests, provided the fines be returned to the company if the alleged defective plates are found all right.

As the House was worn out by its tariff experiences and hot weather there was no disposition to indulge in the usual parliamentary controversy on such an important matter. It is evident, however, that there will be considerable combustion over it on some future occasion, judging from the conversations of members—that is, provided the test of the 59 plates should not sustain the conclusions of Mr. Cummings' Committee.

The Department conceded certain irregularities when it imposed the fines and required a refund of premiums paid to the Carnegie Company, so to that extent Mr. Cummings and his associates are sustained.

The survey for the new line of electric railway between Philadelphia and Harrisburg has been completed, and the contract for that portion of the line between Philadelphia and Westchester will, it is reported, be let within the next 30 days.

Taking effect Monday, August 20, 1894, rates on articles of iron and steel manufacture from Pittsburgh and points taking Pittsburgh rates, to Bucyrus, Ohio, in carload lots, will be \$1.70 per ton, and in less than carload lots \$1.75 per ton. Taking effect Wednesday, August 22, 1894, on articles of iron and steel manufacture, harrow disks which now read "harrow disks in packages less than carload lots" have been changed to read "harrow disks less than carload lots," and bolster caps have been added to list of articles.

According to a London exchange, the bascules of the great Tower Bridge were raised 311 times in 15 days of July, and during that time 375 vessels passed through. The average daily number of passengers who passed over the bridge during the period noted was 80,000, while the vehicles numbered 6500 per day of 16 hours.

In New South Wales the Government railroads earned last year $3\frac{1}{2}$ per cent. and the tramways 4 per cent. on the capital invested in them.

MANUFACTURING.

Iron and Steel.

The rebuilt structure of the rolling mill of the Chicago Forge & Bolt Company, at Fortieth street and Stewart avenue, Chicago, is of iron and brick, requiring no insurance. It is equipped with 10 and 18 inch trains, having a capacity of 75 tons of finished product per diem. Located in the heart of an important manufacturing district, with unusually fine railroad facilities and ample room for enlargement of plant, it would seem to present an excellent opportunity for engaging in the rolling mill business. As will be seen by an advertisement in this issue, the company will either sell or lease the property.

Jones & Laughlins of Pittsburgh are constructing a new roll shop in connection with their mills. For serving the same they have ordered from the Morgan Engineering Company one of their standard construction traveling cranes, all motions being operated by electric motors. Lifting capacity of the crane, 15 tons; span, about 40 feet.

The new Whiteley Malleable Iron Works, at Munice, Ind., were put in operation on the 20th inst. with a force of 150 men, which will be shortly increased to 500 when all departments are fully under way.

The charcoal blast furnace of the Eagle Iron Company, at Spring Valley, Wis., resumed operations on the 14th inst.

The Pennsylvania Iron & Steel Company have been incorporated under the laws of the State of Washington to engage in a general manufacturing business at Edmonds, Snohomish County. The authorized capital stock is \$100,000. The incorporators are A. D. Eshelman, J. M. Boyd, Ellis Morrison and George R. Fisher.

Horace C. Reynolds, E. Reynolds and George H. Squires are incorporators of the Reynolds Wire Company, at Dixon, Ill., with an authorized capital stock of \$80,000.

A bill in equity has been filed in court at Pottsville, Pa., by J. C. Bright and John M. Callen, the latter the secretary of the Pottsville Iron & Steel Company, asking that receivers be appointed for the concern, and that an injunction be granted restraining the sheriff from selling the property of the company. Judge Pershing granted both applications, and named William A. Atkins, president of the company, and Sidney B. Briscoe as the receivers. The receivers are bonded in \$25,000 each. There is due the company, the petition says, upward of \$70,000, which cannot now be collected owing to the depression in business. It is also set forth that on Wednesday notes to the amount of \$7,700 had gone to protest at the Miners' Bank, and that for some time obligations have been falling due which the company could not meet, because of its inability to make collections. Because of the failure to meet these obligations the sheriff levied on property and products to the value of \$100,000, and, the petition continues, if they should be sold the disposal would impair the security of \$300,000 of bonds which are secured by mortgage. Upon the completion of contracts now on hand the company will receive \$200,000. The floating debt is \$241,000.

The Monongahela Tin Plate Company of Pittsburgh have been granted a charter of incorporation with a capital stock of \$5000. The incorporators are H. W. Mitchel, Wm. Montgomery, of Pittsburgh, Wm. A. Dodge and Chas. F. Palmer, of Allegheny, Pa.

The strike of the puddlers at the Sligo rolling mill of Phillips, Nimick & Co., at Pittsburgh, for an increase in the rate of puddling from \$3.60 to \$4 per ton has been declared off, the men having signified their willingness to return to work at the old price of \$3.60 per ton.

About 30 puddling furnaces in the American Iron & Steel Works of Jones & Laughlins, Limited, of Pittsburgh are being dismantled and the erection of a new boiler house on the ground formerly occupied by the furnaces will soon be commenced.

Thomas Furnace of the Thomas Furnace Company, Niles, Ohio, after an idleness of several months, is expected to resume blast this week.

Edith Furnace in Allegheny, Pa., owned and operated by the Oliver Iron & Steel Company of Pittsburgh, made an excellent record recently while running on one half mill cinder mixture. The product for a

run of seven days amounted to 1470 tons of iron. The furnace is 16½ feet bosh and 75 feet high.

At the annual meeting of the stockholders of the Pittsburgh Forge & Iron Company, held in that city last week, the old board of directors consisting of Calvin Wells, W. W. Speer, B. H. Rubie, J. H. Dalzell, Murray A. Verner, Ogden Edwards and F. E. Richardson were re-elected. The directors organized by electing Calvin Wells president and F. E. Richardson secretary. The annual reports showed the affairs of the above concern to be in satisfactory condition.

It is announced that the Belfont Iron Works Company of Ironton, Ohio, will blow in their furnace during the current week.

Mabel Furnace at Sharpsville, and Ella Furnace at West Middlesex, Pa., have resumed.

The furnace of the Valentine Iron Company, Bellefonte, Pa., has blown in. It had been idle since the beginning of the coke strike.

It is stated that a company has been formed in Chicago, with a capital of \$400,000, for the purpose of manufacturing wire. It is said that they are now seeking a location, and favor Superior, Wis., as a point at which to establish works.

The Lukens Iron & Steel Company's works, at Coatesville, Pa., have been running full time night and day in all departments for some time past, and large contracts recently taken insure full operation for some time to come.

No. 1 Furnace of the Crane Iron Company, Catasauqua, Pa., has been prepared for blast, and will probably be blown in this week. It goes in on Bessemer.

Contracts for most of the machinery for the new steel plant of the St. Louis Stamp Company, St. Louis, Mo., were awarded last week. This new plant was designed by McClure & Amsler, engineers and contractors of Pittsburgh, and is of modern design throughout. The 34-inch blooming mill, table manipulator and ingot tilter, and also a three-high 26-inch double plate mill were given to the Frank-Kneeland Machine Company of Pittsburgh. The Fischer Foundry & Machine Company, also of Pittsburgh, received the contract for the hydraulic bloom shears and tables.

Machinery.

The Whiting Foundry Equipment Company, Chicago, formerly Detroit Foundry Equipment Company, have recently shipped a No. 3 Whiting patent cupola to Snow & Williams, Delphos, Ohio. They have also shipped a No. 1 cupola to Griffin Wheel Company, Chicago, and a No. 3 to the Escanaba Iron Works, Escanaba, Mich.

The Atlas Engine Works of Indianapolis, Ind., have recently experienced a decided improvement in business. In the first two weeks of August they shipped 28 carloads of engines.

The Lodge & Davis Machine Tool Company of Cincinnati, Ohio, have made shipment to Arequipa, Peru, and Santiago, Chili, on orders received from their salesman who is now traveling in South America. They have also just made shipment of one of their large engine lathes to the port of Odessa, Russia.

The sheriff has levied on the establishment of the Diamond Drill & Mfg. Company, at Birdsboro, Pa., on an execution issued by the Brooke Iron Company and the National Bank of the Republic of Philadelphia for \$115,000. The company were sued last week by a number of their employees for wages. The E. & G. Brooke Iron Company on Saturday issued a warrant for over \$9000 of rent. The company were engaged in the construction of engines and machinery.

The property of the Allentown Foundry & Machine Company, Allentown, Pa., has been seized by the sheriff, and the plant will be sold, it is stated, to satisfy a judgment of \$5000.

The Totten & Hogg Iron and Steel Foundry Company of Pittsburgh, Pa., manufacturers of rolling mill and tin plate machinery, rolling mill engines, &c., have just closed a third contract with the Irondale Steel & Iron Company of Middletown, Ind., to complete two more 24 inch hot mills for making tin plate. Also for two doubling shears with engines attached, one trimming shear, and one 38-inch roll lathes. The first three mills furnished them on the first contract are about set up and ready to run, and

they expect to start the mill about the last of the present month. The balance of the machinery furnished on the second and third orders they expect to have in position and started in September. When the balance of machinery is placed they will have a plant of six hot mills with all the necessary cold rolls, shears, engines, &c., all of which they have purchased from the Totten & Hogg Iron and Steel Foundry Company.

The annual meeting of the stockholders of the Pittsburgh Mfg. Company will be held in that city on Tuesday, September 4 next.

H. E. Collins & Co., Bank of Commerce Building, Pittsburgh, Pa., have taken the general sales agency of the United States for the sale of the Cahall water tube boilers made by the Altman & Taylor Machinery Company of Mansfield, Ohio. They have already received a number of orders for water tube boilers of this type and are now furnishing to Schoenberger & Co., Pittsburgh, Pa., a third order of 400 horse-power. They are also furnishing to Zug & Co., Limited, 150 horse-power; to the Inland Steel Company, Chicago Heights, Ill., 200 horse-power, and to the Philadelphia Natural Gas Company for their new plant at Canonsburg, Pa., 1200 horse-power.

The sheriff has received executions aggregating \$16,363 against the Interchangeable Tool Company of Utica, N. Y., who manufacture nippers, pliers and vises, drop forgings, &c., in favor of the Second National Bank of Utica, for \$5081, and in favor of Wm. M. White for \$11,282. Judgments were also entered against Thos. G. Hall, Wm. M. Smith, Samuel Leopold and Henry Cole Smith in favor of the same parties. The company were established in 1878 with a claimed capital of \$65,000. They had a factory in Brooklyn, afterwards at Boonton, N. J., and removed to Utica about a year ago, where they erected a factory which is said to have cost \$11,000, and bonds were issued for \$30,000. Last December the company claimed assets of \$242,600 and liabilities of \$37,000. They had a long fight over the patent, spending, it was said, \$35,000.

Arthur Gilkerson's machine shop, at Homer, N. Y., has been burned, entailing a loss of \$8000.

The Brunswick Mfg. Company have been organized at Portland, Maine, for the purpose of manufacturing machinery, with \$100,000 capital stock. The officers are: President, W. D. Hatch, and treasurer, W. M. Pennell of Brunswick.

The Delaware Iron Works, at New Castle, Pa., are building an addition to their foundry.

Hardware.

The Perfection Lock Company, with a capital of \$100,000, have been incorporated to manufacture improved nut locks, at Fordyce, Ark.

The plant of the Freeport Bicycle Mfg. Company, Freeport, Ill., has been sold to the Northwestern Sewing Machine Company of Belvidere, Ill.

The Wales & Hamblen Company have been organized, at Portland, Maine, for the purpose of manufacturing hardware, tinware, wooden ware, &c. The capital stock is \$100,000. The officers are Joseph L. Wales, president, and J. G. Hamblen, treasurer.

Fowle & Clemson are building a large addition to their factory, at Woburn, Mass., and will materially increase their business. It is the purpose of the firm to manufacture saws in addition to belt knives, in the production of which it is stated they have been quite successful.

The agricultural implement factory of Smith, Tate & Co., Riverton, Pa., was totally destroyed by fire on the 25th inst. Loss, \$8000; fully insured. The fire is supposed to have been of incendiary origin.

The Independent Shovel Company of Chicago have written to the Mayor of Tacoma, Wash., proposing to establish a shovel manufacturing plant there if a bonus is offered.

A company composed of capitalists of Akron, Ohio, will operate a factory at Kokomo, Ind., under the name of the Kokomo Hardware Novelty Works. They expect to employ from 40 to 50 men.

New Process Twist Drill Company, Taunton, Mass., are enlarging their plant by the addition of about 10,000 feet of floor space which will be used in extending the manufacture of their well-known drills. New machinery will be added and facilities gen-

erally increased. In the remodeled establishment the entire front of the second floor will be given up to offices and immediately back will be a stock room 25 x 30 feet.

The Elwood T. Baker Mfg. Company of Jersey City, N. J., have filed articles of incorporation to begin the business of manufacturing metal goods and novelties. The capital stock is \$40,000. The incorporators are E. T. Baker, William Kruse and R. Wood.

In our last issue, in mentioning the organization of the American Flexible Wire Company of Fort Valley, Ga., the names of the officers were incorrectly given. J. A. Spain is president of the new company, T. H. Logwood vice president and J. O. Bradley secretary and treasurer.

Bimel Standish Mfg. Company, St. Mary's, Ohio, report an increasing trade and are running full force with a good lot of orders on hand. The company are manufacturers of coil, cable, wagon, harness, agricultural, railroad and rafting chain, cattle ties, open links and rings, repair links, &c. They state that their coil and cable chain is proof tested to the United States Government standard.

Miscellaneous.

Frank C. Vierling has filed a bill in the Circuit Court at Chicago asking for a receiver for the corporation of Vierling, McDowell & Co., and an accounting. Vierling, McDowell & Co. have for years been prominent in the architectural iron trade of the West and have a large plant at Twenty-third street and Stewart avenue, Chicago. They built the iron work of the Chamber of Commerce Building, the Leiter Building, now occupied by Siegel, Cooper & Co., and quite a number of other structures of more or less magnitude. Their business has been lucrative, and it is on this account that a receiver has been asked for. The complainant makes accusations against his brothers Robert and Louis, who are large stockholders, charging that they have not dealt with him fairly. He asks the Court to intervene and discover what is equitably due to him and to appoint a receiver to manage the company's affairs pending the final decision of the case. Robert Vierling states that the application for a receiver merely applies to the custody of the books of the old firm of Vierling, McDowell & Co., whose business was turned over to the present corporation of Vierling, McDowell & Co. some years since. He denies that his brother Frank has any claim upon the concern and says that a full settlement has been made.

The Berlin Iron Bridge Company of East Berlin, Conn., have received the contract for the new plant of the Fairfield Copper Company, at Monroe, Conn. The plant will be entirely of iron and steel, no wood work being used about the construction.

The great plant of the Madison Car Works, at Madison, Ill., which has been idle for a long time, is expected to be put in operation about September 1. Materials are being accumulated for this purpose.

The American Brass Works, recently removed to Porter, Ind., from Cambridge, Mass., have been put in operation.

The Cohen Bros. Iron and Metal Company are a new corporation at Des Moines, Iowa, organized with a capital stock of \$10,000.

The Carbon Limestone Company of Youngstown, Ohio, much of whose product is sold to blast furnaces in Ohio and Pennsylvania, have leased extensive limestone lands near Altoona, Pa., and four quarries will soon be opened up on the property.

The Pittsburgh Bridge Company of Pittsburgh have secured a contract from the Ansonia Copper Company to furnish an iron roof for one of their buildings, 80 x 100 feet in size. The same concern have a contract for the erection of a bridge for the South St. Paul Belt Line Railway and Bridge Company to connect South St. Paul, Minn., and St. Paul Park on opposite sides of the Mississippi River.

Fire caused damage to the amount of \$50,000 in the Boston & Maine repair shops at Salem, Mass.

The real estate and shipbuilding plant of Harrison Loring, at South Boston, Mass., have been sold at assignees' sale to Chas. E. Brigham for \$55,000. The assessed value of the real estate alone is \$96,000.

The Ohio Falls Car Mfg. Company of Jeffersonville, Ind., have resumed operations after a year's idleness, having been awarded a contract to build 500 cars for the Pennsylvania Railroad Company.

The Thompson Fuel Saving & Smoke Consuming Company, organized at Berwick, Maine, for the purpose of furnishing improvements for furnaces, stove linings, ovens, &c., have filed certificate. The capital stock is \$500,000, of which, it is stated, \$400,300 has been paid in. W. C. Webber of Bedford, Mass., is president, and W. A. Calef of same place is treasurer.

The Washington Coal & Coke Company, manufacturers of Connellsville Coke, of which concern N. P. Hyndman, Conestoga Building, Pittsburgh, is general sales agent, have just completed the erection of fifty coke ovens on the Elwell Run branch of the Pittsburgh & Lake Erie Railroad, and the ovens are being fired up this week.

The works of The Cuyahoga Wire Company, Cuyahoga Falls, Ohio, which have been idle for several years, have recently been put in full operation. The product of the concern will consist of fine wire, a specialty being made of broom and mattress wire.

Some Pass Literature.

The chief executive officer of one of the most important of the trunk lines, whom we will call Mr. X, has sent to the *Railroad Gazette* a batch of letters, being mostly applications for passes and in a few cases official correspondence with relation thereto between officers of the railroad in question. The letters come from all classes of society. The wife of a poor Nebraska farmer, whose handwriting is painfully neat and whose spelling is a little unreliable, frankly asks for a pass for the reason that she is poor and very homesick, and because she supposes that the railroad company would not feel what to her would be a very great thing indeed. A prosecuting attorney is bumptious and says very plainly that he can help the railroad company more than the circuit judge who actually has an annual pass in his pocket. A bishop of the church is as dignified as a man very well can be when he is begging and puts forward no claim whatever, but simply says that he holds annuities from other railroads and if it is the custom of this particular railroad to give passes he would like one. In other words, he wants all the snaps that there are going, although he does not demand them as belonging to him by rights. A judge of a circuit court is too crafty to write himself, but he sends a verbal message to a local officer of the railroad company, in which he suggests very plainly what he can do and what he would like to do for the company. Between the farmer's wife and the judge and the bishop, representatives of pretty nearly every class of society appear, and there are plenty of editors. But everybody seems to have gone crooked in his morals and intellects so far as the railroad is concerned. Ordinary notions of dignity and even of decency, and the ordinary conceptions of the rights of property, seem to be quite suspended when these citizens of the republic come face to face with their railroads. The *Railroad Gazette* gives a few choice examples drawn from this mass of correspondence from which we quote.

The treasurer of a little inland college writes some seven or eight pages to tell how he has devoted his time and "vital energies" to building up the college. A sister of his wife, who held some office in the staff of the college, died in the service, and he calls that "laying down her life for the cause."

In consideration of the expenditure of his "vital energies" in getting a living as treasurer of the college, and in consideration of the fact that his sister-in-law happened to die while she was employed there instead of having died while not under pay, he wants a round trip pass for himself and family, that is, for himself, his wife and three daughters. He suggests that he has been able to send a good deal of travel over the road that but for his influence might have gone over a rival road; but it does not seem to occur to him that he has either done what any decent fellow would do for his friends in pointing out the best route for them to go by or else he has done an injustice to the rival road. Thus do folks' morals get twisted when they go into this business of begging passes. Finally, when the somewhat stiff backed, or as he probably would have said, the arrogant Mr. X, declines to give the pass, he writes in a tone of great grief. He says: "In fact I never met a more keen and stinging disappointment." He adds: "However, I shall be true to myself," and says in a postscript that "as a result of the outlay of the vital energies of the subscriber the passenger business of the railroad will be increased by a large percent." We do not precisely know what he means by being true to himself, for he fails to specify, and probably he did not know himself.

One letter is from a young man who confesses that he has been "tough," having been a heavy drinker. He has stopped drinking and reformed, but is unable to support his wife, who has gone home to her parents. Now he wants very much to see his wife, and begs that to that end the kind-hearted superintendent will send him a trip pass. This Mr. X declines to do, thinking very properly that it is highly undesirable that the two should come together, for the fewer people there are in the world of that young man's kind the better.

Of course the usual crop of fraud and forgery appears. Women seem to be particular sinners in this kind of petty crime, probably because they have come to think that railroads and custom houses are the legitimate prey of mankind anyway; but people of more worldly wisdom are not above beating the railroads. For example, a member of the State Legislature hands his pass over to another person, and the alert conductor promptly gathers it in and returns it to the proper office. Whether or not the member of the Legislature got pay for the use of his pass does not appear. So it is not an unusual thing to see editorial passes taken up because they are in the hands of persons to whom they were not issued.

The case of the judge, of which we have spoken above, is worth mentioning again. A legal officer of the railroad says that when he was arranging for a certain case to come before this judge in the Circuit Court, the judge asked if he would not get a pass which he (the judge) held changed to include his wife. The lawyer says, "I could not do less than say that I would make the request, as we have another case to be brought before him next Wednesday." So the judge's pass was sent to Mr. X, "without expressing my opinion of the man." We regret that that judge never had a chance to know what the lawyer and Mr. X thought of him. The judges are perhaps not the worst offenders, but it seems to us particularly odious that they should ask for passes. One who has lost his an-

nual writes for a trip pass. Two others' district judges, ask the local agent to procure trip passes for them. Another one, a circuit judge, asks the deputy United States marshal to do this business for him.

Of course public officers of high and low degree appear unceasingly in this batch of letters. Governors of States and mayors of cities, councilmen and aldermen, county clerks and sheriffs appear in melancholy monotony. It would take too much room and be too tiresome to brief the letters from members of the houses of representatives and senates of the States, but these gentlemen ask with serene confidence for passes for themselves, their wives, their children and sometimes for strangers within their gates. One letter is from a prosecuting lawyer in a Western State. He says that he had asked for a pass a couple of months before and had received a printed blank saying "that in accordance with the policy of the company it could not be granted," or something like that. Concerning this he says: "No doubt you are greatly troubled for passes, but to send me a letter like that, with additional words that you would like my co-operation in carrying out this much needed reform, and refusing to grant me the pass, is rather presumptuous, for I have daily to grant favors of the law of a great State for your railroad. Your men are all liable to State prosecutions for running trains on Sundays, also for letting trains stop across public streets in towns and cities and in other ways. You give passes to judges whose salaries are much larger than mine, and my pay depends on the number of successful prosecutions that I procure, as it consists mostly of fees," and more to the same effect. This impudent letter is indorsed "declined," we are glad to see. We fear that few railroad superintendents would have had enough backbone to refuse the request to the roguish prosecuting attorney. The deputy attorney-general of a Western State, who is going to get married, would like a pass for himself and wife, and adds that he will feel under many obligations. This request was declined.

A particularly persistent fellow is the Speaker of the House of Representatives of a Western State. He has received the superintendent's letter saying that he is not authorized to grant passes to members of the Legislature except while the Legislature is in session, but he explains that he is the Speaker of the House and therefore expects and receives special privileges, and has in fact received annual passes from all the other railroads from which he has asked them. We do not know what his luck was, but knowing our friend we suspect that the persistent Speaker had to pay his own fare during the vacation.

The London Gas Supply.

At the half yearly meeting of the South Metropolitan Gas Company of London it was shown that the "penny in the slot" meter had not proved to be the useless toy it was generally supposed to be. Such meters had earned \$60,000 during the year and 24,000,000 feet of gas had passed through them in pennyworths. The hiring out of gas stoves to the public is constantly increasing, nearly 8000 having been added during the year. This would appear to indicate that the gas stove industry is one with a future before it.

The Iron and Metal Trades.

Less and less is being heard of the scarcity of Coke, and, to judge from the rate at which the furnaces west of the Allegheny Mountains are going in, the supply of Bessemer Pig promises soon to be ample. The market has weakened in the West, and quotations in Pittsburgh now stand \$11.65 @ \$11.75. In the East, however, there is still some scarcity.

Chicago has been active in the Billet market, closing about 18,000 for delivery in its own district, and taken some orders further East. Some business has been done in Pittsburgh for September and October delivery at \$16.85 @ \$17. The demand appears to come largely from Rod mills which have made some sales to Wire works at ashade under \$24, sellers' mill. The Wire Nail factories and Barb Wire works are starting up again. In the East prompt Soft Steel is still scarce.

On the whole, prices for Bessemer Pig and Soft Steel have held up very well, but there is a feeling among the buyers, the rolling mills, that prices must come down, since the markets for Finished Iron and Steel are down to the lowest prices reached this year, and in some cases are below that level.

Raw material is certainly cheap. Reports have it that Mesaba Ore has been offered below \$2.25, lower lake ports.

An interesting event in the Steel Rail trade is the capture by the Colorado mill of an order for 12,000 to 15,000 from the Choctaw Coal Road, Oklahoma, in sharp competition with Pittsburgh and Chicago.

There is more business doing East and West in Finished Iron and Steel, but prices are decidedly weaker, notably in Steel Bars. Pittsburgh is again grabbing every order of consequence for Plates and Structural Material in the Eastern markets.

A significant fact is that American Cotton Tie makers have captured orders during this week in competition against free foreign Cotton Ties. Ability to make quick delivery helped them, but it does begin to look as though they will be able to hold a very big share of the business if they are fairly supported by the Billet mills and get decent rates of freight.

In the Metal trade values are adjusting themselves to the lower basis demanded by the new tariff.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, }
CHICAGO, August 29, 1894. }

Transactions have been larger in many lines and the demand steadily improves. The outlook for business from railroads is encouraging. Hardware is moving in much larger quantities. The increased demand in general merchandise is coming from the movement of the crops, which gives farmers more money, and the settlement of the tariff question consequently comes at an exceedingly good time. Better trade is confidently expected in every direction.

Pig Iron.—The movement of local Coke Iron continues up to the average of the past two or three weeks. Shipments are very heavy and the trade seems rapidly getting back to its normal condition. Southern Coke Iron is selling only in carload lots, but the demand for these is improving. Agents of Southern furnace companies have by no means given up hope of maintaining a foothold in this market, but state that experiments have shown that maximum strength is secured by a mixture of Southern and Northern Iron. This is combated by Northern Iron makers, who insist that Southern Irons are wholly unnecessary in this district. Lake Superior Charcoal is moving in small lots only. Quotations are given as follows for cash:

Lake Superior Charcoal.....	\$14.25 @	\$15.00
Local Coke Foundry, No. 1....	10.25 @	10.50
Local Coke Foundry, No. 2....	10.00 @	10.25
Local Coke Foundry, No. 3....	9.50 @	10.10
Local Scotch.....	10.25 @	10.50
Ohio Strong Softeners No. 1....	13.00 @	13.50
Southern Silvery, No. 1.....	.....	.....
Southern Silvery, No. 2.....	.....	.....
Southern Coke, No. 2.....	10.75 @	11.25
Southern Coke, No. 3.....	10.50 @	10.75
Southern, No. 1, Soft.....	10.75 @	11.25
Southern, No. 2, Soft.....	10.50 @	10.75
Tennessee Charcoal, No. 1....	.....	.....
Tennessee Charcoal, No. 2....	.....	.....
Alabama Car Wheel.....	17.50 @	18.00
Jackson County Silvery.....	15.25 @	16.00
Other Ohio Silvery.....	14.25 @	14.50
Coke Bessemer.....	11.25 @	11.50
Malleable Bessemer.....	10.51 @	11.25

Bars.—A fair amount of business has been done, in which a few orders for round lots were included. Belated buyers are now coming in the market slowly to place their season contracts. The prospects for business of this character are excellent, as quite a number of establishments are known to be unsupplied as yet with Iron to cover their requirements. The market on Bar Iron appears to be steady at 1.05¢ @ 1.10¢, Chicago, on mill shipments of Common Iron from Old Rail mixture, and 1.15¢ @ 1.20¢ on Guaranteed Iron. Soft Steel Bars, however, are not quite so firm, and reports are in circulation of material concessions being made, but leading manufacturers continue to quote 1.25¢ @ 1.30¢ on strictly Billet stock. Jobbers quote small lots from store at 1.25¢ upward for Iron and 1.35¢ upward for Soft Steel.

Structural Material.—Prospect's for bridge work are a little better. Quite a number of structures are to be erected over the drainage canal for railroads and highways. Plans are being prepared and proposals will be asked for at an early day. Shapes for building purposes are still moving in only small lots. The country demand continues to be a feature of the trade. Quotations of mill shipments, Chicago delivery, are as follows: Beams and Channels, 1.45¢ @ 1.50¢; Angles, 1.40¢ @ 1.45¢; Tees, 1.65¢; Universal Plates, 1.40¢ @ 1.45¢. Small lots of Beams and Channels from stock, 1.75¢ @ 1.90¢; Angles, 1.50¢ @ 1.60¢; Tees, 1.70¢ @ 1.80¢.

Plates.—While some mills are well supplied with work and agents talk of advancing prices, others are persistently seeking business and are making lower rates. The volume of business is growing, but is hardly in satisfactory condition. Jobbers report their trade less active. Mill shipments, Chicago delivery, are quoted as follows: Tank Steel, 1.40¢ @ 1.50¢; Flange Steel, 1.65¢ @ 2.10¢; Fire Box, 1.65¢ @ 5¢. Store prices are as follows: Iron or Steel Sheets, Nos. 10 to 14, 1.80¢ @ 1.90¢; Tank Steel, 1.65¢ @ 1.85¢; Flange Steel, 2¢ @ 2.15¢; Boiler Tubes, in carloads, 70 % @ 75 % off.

Sheets.—Good inquiries continue to come on the market for Black Sheets. Quotations are maintained on mill shipments of No. 27 Common Iron and 2.35¢, Chicago, and on Steel, 2.45¢. Galvanized Sheets are becoming scarce for prompt shipment and mills appear to be full of work. Prices are very firm. Agents quote mill shipments at 75 and 10 % and 10 % off, Chicago delivery. Sheet Copper is quoted at 14¢ base, in large lots, but concessions are being made in some cases. Jobbers quote from store small lots of No. 27 Common Black Sheets at 2.60¢ @ 2.70¢, and Galvanized Sheets 75 and 5 % to 75 and 10 %.

Merchant Steel.—A pronounced increase in trade is reported in Tires; orders are coming in from all classes of consumers. In other respects no especial change has occurred in the situation. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 1.60¢ @ 1.70¢; Smooth Finished Tire, 1.60¢ @ 1.70¢; Open Hearth Spring Steel, 1.85¢ @ 1.90¢; Bessemer Machinery, 1.50¢ @ 1.55¢; Bessemer Tire, 1.40¢ @ 1.45¢; Ordinary Tool Steel, 5½¢ @ 7¢; Specials, 10½¢ and upward.

Billets and Rods.—Sales are reported of about 18,000 tons of Billets in this territory and 4,000 for delivery further East. Orders taken are only in part for early delivery, so that plenty of tonnage is still available at the convenience of purchasers. Manufacturers state that consumers are more ready to buy than two weeks ago, but no one is buying because he thinks material is cheap, but because he has taken contracts which must be covered. Prices are determined by circumstances. For consumption in this immediate locality \$18 @ \$18.25 is asked. Wire Rods are selling in small lots by the Waukegan mill, but the Joliet mill is still shut down, and will not be started until large orders begin to come in. Quotations are firm at \$25 @ \$25.25.

Rails and Track Supplies.—Small lots of Standard Sections are being ordered quite freely for repair work, but an important branch of the Rail trade at the present is the demand for Girder Rails for electric roads. Quite a number of good contracts have been received for such Rails, but the published report is denied that one great street railroad system has placed orders here for 30,000 tons. This is said to be palpably absurd. Quotations are continued as follows: Standard Rails, \$25 @ \$27; Steel Splice Bars, 1.25¢ @ 1.35¢; Track Bolts, with Nuts, 2.10¢ @ 2.20¢; Spikes, 1.70¢ @ 1.80¢; Links and Pins, 1.65¢ @ 1.70¢.

Old Rails and Car Wheels.—Old Iron Rails appear to be held a little more firmly and are quoted at \$10.50 @ \$11, with buyers and sellers still too far apart to accomplish trades. Old Iron Rails are nominally quoted at

\$7.75 @ \$10, and Old Car Wheels at \$10 @ \$10.50.

Scrap.—Very little is doing except in Cast. Dealers quote the following selling prices $\frac{1}{2}$ net ton: Railroad Forge, \$9; Dealers' Forge, \$8 @ \$8.50; No. 1 Mill, \$6.50; Pipes and Flues, \$6; Iron Axles, \$12.25 @ \$12.50; Steel Axles, \$12.75 @ \$13; Heavy Cast, \$7.50; Stove Plate, \$5 @ \$5.50; Cast Borings, \$3.50; Wrought Turnings, \$5; Axle Turnings, \$7; Fish Plates, \$10; Horseshoes, \$9; Mixed Steel, gross ton, \$5.50.

Metals.—Carload lots of Lake Copper are quoted at 9.50¢; Casting Copper is much firmer and in considerably better demand, while rates have advanced to 9 $\frac{1}{2}$ ¢ @ 9 $\frac{3}{4}$ ¢. Spelter is dull at 3.20¢. Pig Lead is quoted at 3.13¢ @ 3.20¢, but is quiet with a downward tendency. Several anxious sellers are in the market and concessions would be made to effect sales.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., August 28, 1894.

The general tone of the market denotes improvement, which, however, is more in the volume of business than in prices. It is pleasant to find, however, that every day brings in as many orders as are sent out, and in some instances there is a gradual accumulation of business, showing that the movement is general and likely to become permanent. Prices, as a rule, are steady, but there is an uncertainty in regard to Steel which is somewhat confusing. Bessemer Pig at \$14 and Billets at close to \$20 are considered out of proportion to the rest of the market, and nobody will buy that can do without buying. If it is simply a question of water, as most of the Western people claim, there must be a readjustment soon, as there is no special reason why Steel should sell at \$2 @ \$3 advance, while everything else remains at the old figures. The only strong point seems to be that the shortage of Steel is increasing every day, and, as the vacant spaces must be filled in soon, it may enable Steel makers to run present prices pretty well through the fall months. They claim that they cannot increase their output under present conditions, and, as the demand is gradually expanding, they have some points strongly in their favor. In other directions prices are not very much above the lowest of the entire year, but there is less complaining because of the comparative ease with which sales can be made. On the whole, therefore, it is clear that the tendency of the market is toward improvement, and, if there are no further setbacks, consumption ought after a while to reach what it was a couple of years ago, although there is not much prospect for materially better prices.

Pig Iron.—There is no decided change in this department of the Iron trade. Some holders claim to be getting higher prices, but there are plenty of others ready and willing to meet the demand at the old figures, so that whatever it may be in individual cases, general quotations may be said to be steady and unchanged. There is a better demand, however, and sales can be made with less pressure than for months past, showing that consumers need material and that the supply is not out of proportion to the demands. There is not enough in it, however, to warrant predictions of any material change in prices, all that can be said is that there

is a broader market and prices are steadier. Bessemer Iron is still scarce and prompt deliveries readily command \$13.75 @ \$14, but consumers regard these as temporary quotations and therefore take only such small lots as are required for immediate use. General quotations for Philadelphia or nearby deliveries are about as follows:

Bessemer.....	\$13.75 @ \$14.00
Standard No. 1 Foundry X.....	12.50 @ \$13.00
Standard No. 2 Foundry X.....	11.50 @ 12.00
No. 2 Plain.....	10.75 @ 11.00
No. 1 Soft.....	11.50 @ 11.75
No. 2 Soft.....	10.75 @ 11.00
Standard Gray Forge.....	10.50 @ 10.75
Ordinary.....	10.25 @ 10.50

Muck Bars.—Demand slow at unchanged prices. Some hold at \$19.50 and upward, but sales reported during the week were at \$19 @ 19.25, f.o.b. sellers' mills.

Steel Billets.—There is little or no change from last week, Spot Steel being scarce and dear, but with no demand of any account. Sellers quote \$19.75 @ \$20 for September shipments, but it is intimated that for long shipments, including a portion for September, \$19.25 @ \$19.50 can be done. Consumers still think that these figures are too high, so that business is confined to such small lots as are required for immediate use. The shortage is said to be due to scarcity of Coke, which if true can only be temporary, hence the unwillingness of buyers to pay current prices for Billets.

Finished Material.—The market maintains all the improvement noted during the past two or three weeks, but there is no change in prices, manufacturers being anxious to secure a full supply of orders before venturing upon a demand for higher figures. The volume of business appears to be broadening, and there are indications that this feature will be confirmed as the season advances, as there is a great deal of work in prospect. There is nothing to warrant the idea of any unusual movement, but the point of exhaustion has been reached in so many cases that continuous buying is a necessity. Production in this vicinity is still very much below what it is in ordinary times, hence it does not require much of a demand to cause a good deal of activity, and if mills that are now closed start up, it will require a bigger demand to keep things moving than immediate prospects warrant the trade in expecting. Compared with any time since July, 1893, business is very good; compared with times previous to that date it is very poor. The past week's business has been chiefly in small lots, an order for several hundred tons city bridge work being the only one worth mentioning as regards quantity. There is a moderate amount of business in sight, however, and on the whole the trade are very much encouraged by recent developments. General quotations are about as follows (delivered):

Grooved Skelp.....	1.25¢ @ 1.30¢
Standard Refined Bars.....	1.20¢ @ 1.25¢
Medium quality.....	1.10¢ @ 1.15¢
Tank Steel.....	1.35¢ @ 1.40¢
Heavy Plates.....	1.30¢ @ 1.40¢
Shell.....	1.50¢ @ 1.60¢
Flange.....	1.60¢ @ 1.80¢
Angles.....	1.40¢ @ 1.50¢
Beams and Channels.....	1.50¢ @ 1.60¢

Old Material.—The demand is much better than it has been, and as stocks are running very light, holders are inclined to advance their prices. In Heavy Steel, and in choice No. 1 Wrought Scrap, this has been accomplished to the extent of about \$1 $\frac{1}{2}$ ton, but ordinary lots cannot be moved unless at

about the old figures. General quotations (delivered) are about as follows:

Heavy Melting Steel.....	\$10.50 @ \$11.50
Light Melting Steel.....	8.00 @ 8.50
No. 1 Wrought Scrap.....	10.50 @ 11.50
Machinery Cast.....	9.50 @ 10.00
Wrought Turnings.....	8.00 @ 8.50
Cast Borings.....	6.25 @ 6.75
Old Iron Rails.....	11.50 @ 12.00
Old Car Wheels.....	9.50 @ 10.00

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, August 28, 1894.

After months of vexatious delay, causing almost complete paralysis of the business interests of the country, the tariff bill is a law and the business world gives a sigh of relief. As to what effect the lowering of duties will have on the Iron trade in general time alone will determine. As to Tin Plate and Cotton Ties, these have been hardest hit, particularly the latter, and both interests have been most seriously injured. Of course the Tin Plate industry in this country has reached that stage of development that insures it a permanent place in our industries, but the rate of progress in the future will be considerably slower than it has been in the past. The concerns who have been dipping foreign plates will not be able to stand against their competitors who have their own Sheet mills. With the present low prices little is to be feared from foreign competition, but a revival in trade and a gradual recovery in prices will give our foreign competitors the opportunity they have been awaiting. The condition of the Iron and Steel trades as compared with a month or two ago shows some improvement in volume of business, but prices are no better, while here and there some weak spots exist.

Pig Iron.—The supply of Bessemer Pig is increasing and while no actual decline in prices has occurred, the tone of the market is weaker. In the Valleys a dozen furnaces were active last week, and this number will likely be increased this week by the addition of Thomas, at Niles, and one or two other stacks. In the Pittsburgh district only three stacks are idle, and two of these will be active within a short time. As stated above the supply of Pig Iron is better, but with the Steel plants all active there is still a scarcity of Iron and this bids fair to be intensified by the drought in the Coke region. There is an increased demand for Forge Iron, and with a limited supply prices are firm on the basis of \$9.25 @ \$9.50, at Valley Furnace. Foundry Irons show no change, the demand being very light, but the supply is also limited to some extent and prices are fairly strong. We quote as follows:

Neutral Gray Forge.....	\$9.90 @ \$10.15 Cash.
All-Ore Mill.....	9.75 @ 10.00 "
No. 1 Foundry.....	11.75 @ 12.00 "
No. 2 Foundry.....	10.75 @ 11.00 "
Bessemer.....	11.65 @ 11.90 "

We note a sale of 5000 tons of Bessemer for September and October, at \$11.65, Pittsburgh; 1000 tons at \$11.60, Pittsburgh, and 1000 tons at \$11.90, Pittsburgh; also a sale of 1000 tons of high grade Forge at \$10.15, Pittsburgh, and another sale of 1000 tons at \$10, Pittsburgh; also a sale of 50 tons of No. 2 Foundry at \$10.75, Pittsburgh.

Billets.—From Cleveland comes the information that a Western mill has sold two good sized lots of Billets in that market at prices somewhat lower than are ruling either in Pittsburgh or Wheeling. In all 4000 tons of 4 x 4

and 4000 tons of 2 x 2 inch Billets were purchased equally by two concerns, the price of the 4 x 4 Billets being given as \$16.85 Cleveland, netting the seller \$16.40 at mill. There is a fair demand for Billets for September shipment, and while some figuring has been done on Steel for the last three months of the year, no actual transactions are reported. We quote for September delivery at \$17 @ \$17.50, at makers' mill. Some mills that are well fixed with orders decline to shade our higher quotation. We note a sale of 1000 tons at \$17.25, at mill, and one of 500 tons at \$17.50, at mill, both for early delivery.

Ferromanganese.—We continue quotation of \$53, delivered at buyers' mill.

Plates.—A Pittsburgh mill has taken an order for 1000 tons of Plates to be used in the building of car trucks for an Eastern road. An order for 800 tons of Bridge Plates for the Schuylkill Bridge was also placed here last week. The demand is fairly active and prices are about as they were, with the exception that some mills are more inclined to shade prices when a good sized order comes up. We quote as follows: Tank Steel, 1.20¢ @ 1.30¢, according to order; Shell, 1.30¢ @ 1.40¢; Flange, 1.40¢ @ 1.50¢; Fire Box, 2½¢ @ 3½¢, according to quality.

Structural Material.—There is a continued good demand for Beams, Pittsburgh taking some large Eastern contracts within the last week or two. Bridge material is also active. Bids for the Steel for the new Bank of Pittsburgh Building will be asked in a short time. We quote as follows: Beams and Channels up to 15 inches, at 1.25¢ @ 1.35¢, according to order. Angles and Universal Plates at 1.20¢ @ 1.25¢, and Tees, 1.40¢ @ 1.50¢.

Bars.—Some good sized season contracts for both Iron and Steel Bars have lately been placed and some extremely low prices have been made. On Common Iron Bars 1¢ at mill has been shaded, and on Steel Bars 1¢ has been done. It would seem that the policy of slashing prices when a good order comes up is the wrong one, but it shows that some mills prefer to run without a profit in preference to being idle. We quote Common Iron Bars at 1¢ @ 1.05¢ and Steel Bars at 1.05¢ @ 1.10¢, with the usual extras.

Muck Bars.—We quote at \$19 @ \$19.25, delivered at buyers' mill, for best grades.

Merchant Steel.—Most of the large season contracts have been placed, but the general demand continues fair. We quote as follows: Bessemer Machinery, 1.30¢ @ 1.35¢; Open Hearth Spring, 1.65¢ @ 1.70¢; Open Hearth Machinery, 1.45¢ @ 1.55¢; Machine Straightened Tire, 1.60¢ @ 1.65¢; Tool Steel, 5¢ @ 7¢ for ordinary grades; 11¢ @ 13¢ for extra grades.

Wire Rods.—There is a decided scarcity of Wire Rods for prompt shipment, and prices are firm on the basis of \$24, Pittsburgh. Some good sized inquiries are in the market, but the local mills are reported as being well sold up for September.

Wire Nails.—A leading concern advises us that the demand has improved greatly during the last couple of weeks, and indications point to a much larger fall trade this year than we had last year. Prices, however, show no improvement, and we quote Wire Nails at \$1.05 base in carload lots, at mill, for

usual averages. The demand for Cut Nails is also improving, and production is larger than for some time past. Like Wire Nails, the better demand has not improved prices, and we continue to quote at 90¢ in carload lots, at mill, for usual averages.

Barb Wire.—The demand shows considerable improvement, and indications point to a very satisfactory fall trade as far as volume of business is concerned. Prices do not show any improvement, and we quote Four Point Galvanized at \$2.05 in carload lots at mill.

Sheets.—The demand for Black and Galvanized Sheets is very light, the mills being employed on old orders. Prices are unchanged, and we quote No. 27 Iron at 2.25¢ and No. 27 Steel at 2.35¢. Galvanized Sheets are ruling at 80 % off for good sized orders.

Skelp Iron and Steel.—We note a sale of 150 tons of Grooved Steel Skelp at 1.10¢ at mill, 2 % off in ten days. We quote Grooved Steel Skelp, 1.05¢ @ 1.10¢; Sheared Steel Skelp, 1.15¢ @ 1.20¢; Grooved Iron Skelp, 1.25¢ @ 1.30¢; Sheared Iron Skelp, 1.35¢ @ 1.40¢, less 2 % cash in ten days.

Pipes and Tubes.—An order for 6800 feet of 16-inch Live Pipe for the Philadelphia Natural Gas Company is expected to be placed here this week. It is understood that some very low prices have been made. The demand for Pipes and Tubes is fairly large, several of the large concerns being employed to nearly full capacity. As compared with a month ago, prices are not as firm, depending altogether on the nature and size of the order.

Connellsville Coke.—Indications point to an early termination of the long strike, many of the Slavs and Hungarians having already returned to work. The list of active ovens is being increased daily and shipments are also improving. At present close to 400 cars of Coke are being sent into the Valley districts every day. Most of the Valley furnaces have contracts for Coke with a leading maker up to December 31, giving Pig Iron in exchange, and for this reason practically nothing is being done in the direction of making new contracts. For September delivery \$1.25 ¢ ton, at ovens, is being readily paid for Furnace Coke.

will remain practically stationary. We quote for cash, f.o.b. cars Louisville:

Southern Coke, No. 1 Foundry	\$10.00 @ \$10.50
Southern Coke, No. 2 Foundry	9.25 @ 9.50
Southern Coke, No. 3 Foundry	8.75 @ 9.00
Southern Coke, Gray Forge	8.50 @ 8.75
Southern Charcoal, No. 1 Foundry	12.50 @ 13.50
Southern Car Wheel	15.00 @ 15.50

St. Louis.

(By Telegraph.)

Office of The Iron Age,
Bank of Commerce Building,
St. Louis, August 29, 1894.

Pig Iron.—The local demand is showing a steady increase and sellers are in receipt of inquiries which indicate a continuance of the present activity. The Southern furnaces are in good shape and among the stronger concerns the disposition is not to encourage anything in the way of a sharp advance, as it is believed that many furnaces now out of blast would be blown in and the market thus become overstocked. As the situation now is there are no large stocks of Iron on hand, and sufficient orders for future delivery are already secured to prevent any accumulation of Iron for the balance of the year. Prices are well maintained and there seems no immediate prospect of any change in either direction. A steady market is anticipated and will likely result. We quote as follows for cash, f.o.b. cars St. Louis. Quotations unchanged:

Southern Coke, No. 1 Foundry	\$11.00 @ \$11.25
Southern Coke, No. 2 Foundry	10.25 @ 10.50
Southern Coke, No. 3 Foundry	9.75 @ 10.00
Southern Car Wheel	16.50 @ 17.00
Gray Forge	9.50 @ 9.75
Ohio Softeners	14.00 @ 14.50

Bar Iron.—There is not much activity in this department, although mills are hopeful and are making arrangements for a good fall trade. Car builders are buying a trifle more heavily and railroads are also increasing their orders, so that there is a fair amount of business moving, but nothing heavy. Mills quote 1.15¢ @ 1.20¢, according to quantity. Jobbers ask 1.30¢ @ 1.35¢, according to quantity.

Barb Wire.—The demand from Southern points continues to be moderately heavy, but outside of this there is nothing of interest to note. Painted is quoted at \$1.85 in carload lots, with Galvanized at 40¢ ¢ hundredweight additional.

Wire Nails.—The demand for Wire Nails shows a decided improvement, and mills are holding firm at \$1.20 in carload lots. There is no surplus stock on hand as mills have been running only about half turn for some months past, so that a continuance of the present demand will soon make itself felt on prices.

Rails and Track Supplies.—There is some business doing in Light Rails, but Standards seem to be neglected at from \$26.50 to \$27. Old Iron Rails are nominal at \$10 @ \$10.50. Track Supplies are in better demand and prices in some lines higher. We quote as follows: Splice Bars, 1.35¢; Spikes, 1.70¢ @ 1.75¢; Bolts, Square Nuts, 2¢; with Hexagon Nuts, 2.10¢; Steel Links and Pins, 1.55¢; Iron, 1.65¢.

Pig Lead.—This market is hard to quote. Sellers are asking all the way from 3.15¢ @ 3.25¢, with sales at 3.17½¢ @ 3.20¢. At the close of the market to-day 3.15¢ was bid without, however, finding a seller. The market is largely speculative and very little

Louisville.

LOUISVILLE, KY., August 25, 1894

There has been no change in prices. Buyers can purchase for delivery this year on basis that has been quoted for several weeks. Some furnaces that are oversold are short certain grades, and will not accept delivery for prompt shipment, but all grades in reasonable quantities can be obtained without trouble. The prospects for the future are somewhat improved. Orders are coming in from railroads for Car Supplies, and a number of shops will start up that have been idle for a long time. Many other manufacturing establishments report better business, though no improvement in price, and there is a feeling of more confidence than has been exhibited for a long time. The question of price, however, is very uncertain, some feeling that they have good reason to expect an advance during the fall, while many take the opposite view, believing the present market

Lead is now being bought for consumption.

Spelter.—At 3 15¢ Spelter seems to be anchored. The increased activity among galvanizers will no doubt have a beneficial influence on this metal, and a slight upward turn would not be unexpected. Sales are limited to carload lots for immediate shipment.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts.,
CINCINNATI, August 29, 1894.

There has been considerable increase in the demand for Southern Pig Iron during the week, partly from consumers in this district, but largely from the Pittsburgh and Eastern districts, to be converted into steel and other finished product. The sales were in lots ranging from 100 to 500 tons, and in some instances reaching 1000 tons, but the demand was quite freely supplied at previous prices, and while the aggregate sales were satisfactory in volume, it seems to be considered doubtful whether they will keep up very long, for it is expected that the free offerings of the Northern furnaces will quite fully supply the demand in some districts, but for the present and immediate future there will doubtless be wanted all the Iron which the Southern furnaces have the capacity to turn out. Soft No. 1 and No. 2 Foundry grades are still wanted in excess of the supply, although there is much more than there has been. It is hoped that with a new tariff bill in force general trade will improve and Pig Iron will consequently be benefited. Quotations are as follows:

Foundry.

Southern Coke, No. 1.....	\$10.50 @	\$10.75
Southern Coke, No. 2.....	9.75 @	10.00
Southern Coke, No. 3.....	9.25 @	9.50
Ohio Soft Stone Coal, No. 1....	14.50 @	15.50
Ohio Soft Stone Coal, No. 2....	14.00 @	14.50
Lake Superior Coke, No. 1.....	12.50 @	13.00
Lake Superior Coke, No. 2.....	11.50 @	12.00
Hanging Rock Charcoal, No. 1..	16.00 @	17.00
Hanging Rock Charcoal, No. 2..	15.50 @	16.00
Tennessee Charcoal, No. 1.....	13.00 @	13.50
Tennessee Charcoal, No. 2.....	12.00 @	12.50

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	16.25 @	17.00
Lake Superior Car Wheel and Malleable.....	15.25 @	15.75

Forge.

Gray Forge.....	8.75 @	9.00
Mottled Coke.....	8.50 @	8.75

Rogers, Brown & Co., Cincinnati, with their branches at St. Louis, Chicago, Buffalo, Philadelphia and New York, have been appointed sole sales agents of the Douglas Furnaces of Sharpsville, Pa., which have gone into blast again on Standard Foundry Iron.

Birmingham.

BIRMINGHAM, ALA., August 27, 1894.

While the last week does not show any direct improvement, yet the general tone of the market is visibly strengthening. Prices are becoming firm, concessions fewer and inquiries show a steady increase. It is evident that customers are beginning to realize that there is not much prospect of prices again lowering, though, on the other hand, the furnaces have as yet no cause to anticipate any marked improvement for the next few months. There are very few new sales made except on the basis of present quotations. Crop prospects in the South are still very favorable, in spite of some contrary reports. As there has been comparatively little

borrowing by the farmer this year, this will tend to put him on a stronger basis and give him a greater trading capacity when his crops are harvested. This will prove an important factor to the retail trade and thereby become of interest to the wholesaler.

The Coal situation is at last definitely settled in favor of the operators. The Tennessee Coal, Iron & Railroad Company are operating nearly all their mines under contract with the Union. The Sloss Iron & Steel Company made their terms with their men individually, and all opposition has finally disappeared. The men are anxious to get to work, and while the companies are protecting the men who worked for them during the strike, yet vacancies are being filled with the old hands. In many cases the old hands are put to work on the smaller and more difficult seams, which have been idle on account of lack of experienced men to mine them. In this way the Coal production is rapidly gaining and will soon be at its old figures.

Pig Iron.—Several more furnaces are preparing to go into blast as soon as Coke supplies are again fully up to demand. The Alice and No. 1 of the Tennessee Coal, Iron & Railroad Company are being repaired and relined; also No. 4 of the Sloss Iron & Steel Company, which is almost ready. The two Thomas furnaces will be ready in a short while. This will make five more furnaces, or 16 out of 23 in the district, in blast before the close of the year. This is a very good preparation, considering the times, and indicates a heavy demand for Southern Pig. In this connection Rogers, Brown & Merwin of Chicago are to be commended for the strong stand taken by them in favor of Southern Irons in the Chicago or Northwest markets, even at higher prices than offered by local brands there. Stocks are not increasing at all, new sales are good and still largely exceed supplies. There is some difficulty to supply the demand for immediate shipment. The soft grades are still scarce and in great demand.

Tests on Fortimolite metal continue to be made, and the matter is now seriously taken up by the Sloss Iron & Steel Company, who will make a thorough and exhaustive series of tests of the process. The results will be presented in full when completed.

New York.

Office of *The Iron Age*, 96-102 Reade street,
NEW YORK, August 29, 1894.

Pig Iron.—The quantity of orders coming up in this market continues very small. We quote standard brands \$12 50 @ \$13 for No. 1; \$11 @ \$12 for No. 2, at tidewater. Southern Iron, same delivery, \$11.50 @ \$12.25 for No. 1; \$10.50 @ \$11 for No. 2; \$10 @ \$10.25 for No. 3; \$10 25 @ \$10.75 for No. 2 Soft, and \$10.50 @ \$11 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$9.75 @ \$10.25.

Cast Iron Pipe.—No orders of magnitude have been placed during the week. Figures have gone in on about 1000 tons for Honolulu, an order which has been on the taps for some time past. So far as we can learn nothing has been done with the Japanese order, which has been talked of as involving as much as 50,000 tons. We are advised that it is less one tenth of that quantity, and that there is little chance of its being put through, for financial

reasons. An order is in the market for South America. The Long Island contracts have been taken by New Jersey shops.

Spiegeleisen and Ferromanganese.

—The market is very dull. Foreign 20 % Spiegeleisen has been offered at \$20.50, ex-ship. Ferromanganese is nominally \$50 @ \$50.50.

Billets and Rods.—We quote nominally Domestic Billets \$19 25 @ \$19 50, and Wire Rods \$26.50 @ \$27, tidewater.

Steel Rails.—The most interesting event of the week has been the sale, on private terms, of 12,000 to 15,000 tons of Steel Rails by the Colorado Fuel & Iron Company of Pueblo to the Choctaw coal road, Oklahoma, in sharp competition with Pittsburgh and Chicago. In the East the market is very dull and remains \$24.80, tidewater, for Standard Rails.

Track Material.—We quote as follows for small lots: Spikes, 1.50¢ @ 1.70¢; Fish Plates, 1.20¢ @ 1.40¢; Track Bolts, Square Nuts, 2¢ @ 2.10¢, and Hexagon Nuts, 2.10¢ @ 2.30¢, delivered.

Manufactured Iron and Steel.—The contract for the wool warehouse involving about 1000 tons of Structural Steel was taken by the Jackson Works, the material to come from a Pittsburgh mill. The abrogation of the reciprocity feature of the McKinley bill by the new tariff stops business in Structural Iron with Cuba. A proposed market building in Havana, calling for about \$350,000 worth of Iron work would have gone to this country. Now it will go to Belgium, where 1.30¢ was quoted on Steel Beams and 1.05¢ on Columns, &c. Freights are in their favor. Freights from this port have been advanced 25 % on Iron and Steel, "to make up for diminished tonnage." We note sales of about 40,000 bundles of Cotton Ties made by an American mill in competition with Foreign Ties, duty free. Some very low figures on long time contracts have been made recently in this market by a Pittsburgh concern on Rolled Shafting. We quote: Beams up to 15-inch, 1.40¢ @ 1.50¢ for round lots; Angles, 1.30¢ @ 1.35¢; Universal Mill Plates, 1.25¢ @ 1.35¢; Tees, 1.50¢ @ 1.60¢; Channels, 1.40¢ @ 1.50¢, on dock. Steel Plates are 1.30¢ @ 1.40¢ for Tank; 1.40¢ @ 1.50¢ for Shell; 1.60¢ @ 1.65¢ for Flange, and 1.75¢ @ 2¢ for Fire Box, and 2¢ @ 2.25¢ for Locomotive Fire Box, on dock; Refined Bars are 1.25¢ @ 1.9¢, on dock, and Common 1.10¢ @ 1.20¢; Soft Steel Bars are 1.20¢ @ 1.30¢; Scrap Axles are quotable at 1.35¢ @ 1.50¢, delivered; Steel Axles, 1.35¢ @ 1.50¢, and Links and Pins, 1.40¢ @ 1.60¢; Steel Hoops, 1.40¢ @ 1.50¢, delivered; Cotton Ties, 70¢ @ 75¢ @ 45 lb bundle, tidewater; Machinery Steel, 1.20¢ @ 1.40¢; Toe Calk, 1.75¢ @ 1.90¢, and Sleigh Shoe, 1.60¢ @ 1.75¢, delivered.

It is estimated that the permanent pumping plant and pumping stations for increasing the water supply of Brooklyn, N. Y., by 25,000,000 gallons daily will cost in the neighborhood of \$200,000. This work is yet to be contracted for. The contract for the driven wells, for temporary pumps and for permanent connections has been awarded to Edwards & Co. of New York for \$170,000.

Financial.

The principal occurrence of the week under review has been the passage into law of the new tariff bill and the definite removal, for a time at least, of the uncertainty which has for so long hampered the business of the country. Whatever the intrinsic merits or demerits of the Gorman bill may be, it is undoubtedly the case that its enactment has been succeeded by a more cheerful feeling in business circles. Already an accession of activity is noted in the financial and commercial world. This fact is seen in a large increase in bank clearings and a recovery in the general demand for products, which, although not yet reaching very large proportions, is enough to be quite notable, and to give the assurance of better things to come.

The bank clearings at all the clearing houses of the country for the week ending last Saturday show a total of nearly \$800,000,000, against \$646,000,000 in the corresponding week of last year, an increase of 23.8%. Compared with 1892, however, they exhibit a decline of 13.75%; but if the great fall in values in the interval is taken into account, comparison would probably show that the actual volume of business was very nearly as great as it was two years ago. This is satisfactory as showing that the country generally is recovering in business activity after its prolonged spell of trade depression. The Government Treasury, too, shares in the financial improvement, and no longer are fears expressed in regard to its reserve. Receipts from customs and internal revenue have increased to a very gratifying extent, and a gradual growth in the Treasury gold reserve goes on from day to day. It is estimated that the total receipts for August will aggregate about \$45,000,000, against expenditures of about \$31,000,000, leaving a surplus for the month of about \$14,000,000 to swell the general Treasury balance.

Compared with those of this time last year railroad earnings begin to show, in some instances, a smart increase. The comparison is, however, with a time of tremendous depression, and, therefore, only valuable as demonstrating the fact that business has improved since then. The gratifying fact remains, however, that compared with 1892, earnings show improvement to the extent of a steady lessening in the percentage of declines. The gross earnings of 72 roads for the second week in August, as compiled by the *Financial Chronicle*, were a fraction of 1% larger than last year, but 14.9% smaller than in 1892. Considering, however, that the roads lack the large passenger traffic which the World's Fair gave them last year, and that the revival of business has had but little time to gather force, the course of earnings must be regarded as encouraging. Earnings so far reported for the third week in this month exhibit a still more satisfactory increase over a year ago. St. Paul's earnings for the week, for instance, show a net gain of \$28,822, and those of Louisville \$46,245. The *Chronicle's* statement of gross and net railroad earnings for the first half of this year illustrates the sinister effect of the late business upset. It shows a loss of nearly \$69,000,000 in gross and over \$23,500,000 in net on 112,570 miles of road. Fortunately this reflects past conditions. Westbound shipments are reported as exhibiting a marked increase, and eastbound transportation

last week gained 1600 tons on those of the previous week, and more than 3000 tons as compared with those of the corresponding week last year. The cutting of eastbound rates, however, is an unsatisfactory feature, so far as railroad earnings are concerned.

Last Saturday's statement of the New York associated banks was expected to exhibit a decrease of several millions in cash on account of the large losses to the Sub-Treasury and the demand from the South for crop moving, instead of which the statement recorded a decrease of only \$863,800 in specie and notes, while the expansion in loans was less than \$2,500,000, and deposits increased \$896,800. The result of all changes was a decrease of \$1,088,000 in the surplus reserve, which is now \$66,720,000 above legal requirements.

The demand for money, although greater, is not yet as large as bankers could wish, the most marked events of the week in the loan market having been the inquiries from the Whisky Trust and other distillers for funds to pay the 90 cents duty on their bonded spirits before the increased duty came into effect, and some considerable Southern demand for moving the crops. Beyond an accession of activity in commercial paper and an advance in the rates for that material, the loan market has displayed no important change. The supply of first-class commercial paper, though larger, is below the demand, which is quite active on the part of the city banks and trust companies, as well as out-of-town financial institutions. Quotations are 3% @ 3½% for 60 to 90 day indorsed bills receivable; 3½% @ 3¾% for 4-month commission house names, with a few sales at a slightly higher rate; 4% @ 4½% for prime and 4½% @ 5½% for good 4 to 6 month single names. Call loans have been moderately active and easy at 1%. Time money is still in ample supply, while the demand has increased but little, and banks and trust companies complain of less business in this line than ever. Rates are firm at 1½% for 30 days, 2% for 60 days, 2½% for 90 days, 3% for 4, 3½% for 5 and 3¾% @ 4% for 6 months or longer dates. Foreign houses were said to have made loans early in the week at 2½% for 4 months.

Wall street, as usual, discounted the settlement of the tariff question by sharp advances in the prices of stocks and bonds and a renewed strength and activity in the market for securities towards the close of last week. The bulls were in complete command of the stock market up to Saturday, and a large volume of business was transacted, all of the well-known railroad and industrial securities receiving a large share of support, while a good deal of buying was done in the lesser known stocks and those which have no immediate value as dividend paying securities. In general, prices advanced, the railroads showing a gain of about \$1.25 per share and the industrials about \$1.50 for the week. The following is the epitome of the dealings in the most active stocks during the week ending Saturday, August 25:

Distillers and Cattle Feed...	310,823	Adv..	¾
Sugar.....	175,987	Adv..	2½
Chicago, Burlington and Quincy.....	93,949	Adv..	2
St. Paul.....	91,415	Adv..	¾
Chicago Gas.....	79,958	Adv..	¼
Reading.....	34,730	Adv..	1½
Richmond and West Point	34,435	Adv..	¼
Rock Island.....	33,818	Adv..	¾
Louville and Nashville...	28,854	Dec..	¾
General Electric.....	28,666	Dec..	1½
Chesapeake & Ohio.....	22,550	Adv..	1¾

Altogether 1,300,077 stocks were dealt in during the week.

"Whiskey" exhibited the most remarkable gymnastics in rumors respecting the success or failure of the efforts of the Trust to obtain a loan of \$5,000,000 to take its spirits out of bond before the new tariff law should come into operation. Very large dealings in this stock were transacted up to Monday evening, when it was finally known that the loan had not been secured, and the fluctuations from day to day were remarkable. "Insiders" connected with the Trust are believed to have made large profits on the game. "Sugar," in comparison, has been dull. A smaller volume of dealings in all lines of stocks has marked the opening days of the current week, reflecting a reaction after the feverish speculation immediately preceding the final settlement of the tariff question. The market closed dull and irregular, prices being about on a level with those of Thursday last.

The railway and miscellaneous bond market developed great activity in the first part of the week under review. First-class railroad bonds were in great demand and even those of the second class were much sought after for investment. Prices mounted up accordingly and a large total of transactions was recorded. The buying movement has, however, slackened down within the last day or two, although prices remain high. Government bonds have been active and steady. The closing prices on Wednesday were as follows:

	Bid.	Asked.
2's, 1891, registered.....	97	.....
4's, registered.....	114¼	114¾
4's, coupon.....	114¼	115
5's, registered.....	118¾	119¼
5's, coupon.....	118¾	119

Sterling exchange weakened last week owing to more liberal offers of bankers' bills against securities shipped on Saturday, but it has recovered strength this week, the supply of commercial bills being only moderate. Actual business was done on Wednesday at \$4 85¼ for 60 days; \$4 86¼ for demand; \$4 87 for cables, and \$4 84¼ for commercial.

Domestic exchange on New York is quoted as follows: New Orleans, commercial 50 discount, bank par; Savannah, buying par, selling ¼ premium; Charleston, buying at par, selling ¼ premium; San Francisco, sight 12½, telegraph 15; St. Louis, 25 premium; Boston, 5 @ 8 discount; Chicago, 20 discount.

Bar Silver scored a notable advance during the week on account of the Eastern war. On Monday it reached 30½ pence per ounce in London and 66¢, nominal, in New York, but has since fallen about ½¢ per ounce. Shipments from New York during the week have reached about 800,000 ounces.

Corn has advanced still further on continued unfavorable crop reports, which indicate that the supply will reach but little more than is required for home consumption. Wheat and cotton are somewhat lower.

Metal Market.

Pig Tin.—Prices have been adjusted to the new duty basis and considerable business previously in abeyance has been completed. Several hundred tons went at 15.50¢ @ 15.60¢ for delivery this month and next. Consumers have purchased more freely, paying about the usual premium over net cash prices for round lots. Arrivals continue free, and the stock in first hands here has increased to probably the extent of 300 tons thus far this month. At the close

the market was very firm, with bids of 15.60¢ for early deliveries, and 15.65¢, about the lowest figures named by holders.

Copper.—The best efforts in the direction of stimulating business have been slimly rewarded. Home consumers, as a rule, are well supplied and exporters have had no new important orders recently. In fact there has been little movement outside of deliveries on old contracts. Prices are somewhat variable, with the range of 9.10¢ @ 9.20¢ quoted for Lake Superior Ingot, 8½¢ @ 8¾¢ for electrolytic and 8½¢ @ 8¼¢ for ordinary casting stock.

Pig Lead.—Under the influence of lower rate of duty prices have receded to about 3.30¢ for common Western, delivery in September or later. Only a moderate business has been effected, however, and the demand has not shown the degree of spirit that might reasonably be looked for in view of the exceedingly low prices.

Spelter.—Eastern buyers are very indifferent, and it is the exception that they take more than single carload lots. There is free, but not particularly heavy offering, with prices on the basis of about 3.40¢ @ 3.45¢ for ordinary brands landed here or at common point. Fancy brands command about the usual premiums.

Antimony.—Buyers are operating in a hand-to-mouth way only. Sellers do not offer with unusual freedom but liberally enough to keep prices easy at about 8½¢ @ 8¼¢ for Hallett's and 9½¢ @ 10¢ for Cookson's, on the spot.

Tin Plates.—Fairly large contracts were closed for deliveries running through the last quarter of the year, to be imported under the new tariff. The prices were about 75¢ @ 80¢ a box under those current for spot goods. Store trade naturally is dull and prices are more or less uneven, with the following range quoted: Charcoal, Melyn grade, 10, \$6; do., Melyn grade, Crosses, \$7.75; do., Allaway grade, 10, \$5.30; do., Allaway grade, Crosses, \$6.40; do., Grange grade, 10, \$5.45; do., Grange grade, Crosses, \$6.45; do., Terne, M. F., 14 x 20, \$7.20; M. F., 20 x 28, \$14.40; Worcester, 14 x 20, \$5.70; do., 20 x 28, \$11; Allyn grade, 14 x 20, \$5.05; do., 20 x 28, \$10 @ \$10.25; D. R. D. grade, 14 x 20, \$4.85; do., 20 x 28, \$9.70. IC Coke: Penlan grade, \$5; do., J. B. grade, 14 x 20, full weight \$5.10; do., 100 lb. \$4.80; do., 95 lb. \$4.65; do., 90 lb. \$4.55. IC Bessemer Steel, Coke finish, 14 x 20, full weight, \$5.10; do., 100 lb. \$4.77½; do., 95 lb. \$4.62½; do., 90 lb. \$4.55. IC Bessemer Steel, Coke finish, sq., \$5.80. IC Siemen's Steel, Coke finish, sq., \$5.85. Wasters: S. T. P. grade, 14 x 20, \$4.60; do., S. T. P. grade, 20 x 28, \$4.80; do., Abecarne grade, 14 x 20, \$9; do. Abercarne grade, 20 x 28, scarce.

C. Kirchhoff, agent of the United States Geological Survey has issued the following preliminary statement of the production of Lead for the first six months of 1894, as compared with the first and second half of 1893:

	First half 1894.	First half 1893.	Second half 1893.
	Net tons.	Net tons.	Net tons.
Desilverized Lead	86,772	95,421	101,149
Soft Lead	15,610	16,305	15,037
Total production			
Refined Lead	102,382	111,926	116,236
Refined in Bond	21,392	12,230	22,770
Available for Home Market	80,990	99,696	93,466

Contents of Mexican and Canadian Ores	9,786	15,860	13,410
From American Sources	71,204	\$3,838	80,056

Included in the above Desilverized Lead are 2375 tons of Hard Lead produced in the first half of 1894, as compared with 2401 tons of Antimonial Lead during the first half of 1893.

The most striking feature in the statistics presented is the heavy falling off in the quality of Lead drawn from domestic sources. It proves that the decline in the price of Lead and the prostration of the silver mining industry have very seriously affected the Lead industry of the Rocky Mountain States and Territories.

The stocks of Lead in refiners' hands have only been partially reported. Those received show a total of 2655 tons on July 1, 1894, as compared with 2468 tons on January 1. The stock of Soft Lead was 2060 tons in the beginning of the year, as compared with 1880 tons on July 1, 1894.

British Metal Market.

[Special Cable Dispatch to The Iron Age.]

LONDON, August 28, 1894.

Pig Tin prices have fluctuated considerably during the week, dropping to £69. 15/ on sales by American operators and realization of profits by local traders, in the face of higher markets for silver. Subsequently there was a quick recovery of £1. 10/ on large purchases by operators for a rise. The market to-day was very firm, with spots quoted at £71. 2/6 and three months' futures at £71. 10/ @ £71. 12/6.

Copper is momentarily idle, but a large business has been done during the week in which both speculators and consumers were interested. After a reaction, due to realizing profits consequent upon reports of a decline in price of American Copper in New York, prices steadily advanced, rose steadily and are advanced 10/ over the lowest point. To-day business in Merchant Bars was done at £40. 10/ for prompt delivery and £40. 17/6 for three months' futures. Best selected English was quoted at £42 @ £42. 10/.

Tin Plate business has been quieter. Buyers hold back, owing to the attempt of makers to rush prices upward. Ordinary Cokes are held at 3 pence advance over prices that ruled a week ago. Other varieties are also held at more or less advance. Shipments have been light during the week, and there is now a stock of about 286,000 boxes at Swansea.

Pig Lead is stiffer, with £9. 17/6 @ £10 quoted for soft Spanish, but only a moderate business passes.

Spelter is slow at £15. 10/ @ £15. 12/6 for ordinary Silesian, but sellers remain quite firm.

Pig Iron warrants have been fairly active, but more or less irregular in price. Late dealings were at 43/4 @ 43/5 for Scotch, 26/4½ @ 36/8 for Cleveland and 44/10½ @ 45/ for Hematite. For makers' brands about 6d. to 1/ advance is asked.

Underground Temperature.

At the meeting of the British Association a report was presented by the Committee on Underground Temperature. The nineteenth report contained the results of observations taken in 1891, by Mr. Hallock of the Smithsonian Institution, at depths extending to 4462 feet in a nearly dry well at Wheeling, Va. When the observations of 1891 were finished, an oak plug was driven into the top of the casing to protect the hole. In July, 1893, the plug was withdrawn, and the well, instead of being dry as before, was found to be full of fresh water to within 40 feet of the top. This water was believed to have leaked in at the lower end of the innermost casing, at 1570 feet below the surface. By means of inverted Negretti maximum thermometers, protected against pressure by stout glass tubes, careful observations were taken at various depths from 1586 feet to 3196 feet, two thermometers being employed to check one another at each depth. The results were practically identical with those obtained two years previously, when the well was full of air, the greatest certain difference being only one-fifth of a degree. The temperatures at 103 feet, 206 feet and 300 feet were also observed with suitable thermometers, the temperature at 103 feet being 52.53°, which is 1.2° higher than the true temperature of the soil at that depth, as determined by other observations in the immediate neighborhood.

The Colorado Fuel & Iron Company.—The second annual report of the Colorado Fuel & Iron Company for the year ending June 30, 1894, has been submitted to the stockholders by J. C. Osgood, the president. Through a sympathetic strike of the miners, the depression in mining and smelting and the general apathy of business the company suffered keenly. The tonnage of coal and coke decreased 1,037,547 tons. The net earnings showed a decrease of \$402,422.47 or 42 per cent., declining to \$562,109.41. Against these earnings are bond interest, taxes, &c., amounting to \$361,301.21, which left a surplus of \$200,808.20. Out of this a preferred stock dividend for six months of \$80,000 was paid in scrip and \$73,788.56 placed to sinking funds for coal and iron ore mined. The preferred stock dividend for the second half of the fiscal year was not earned, the shortage amounting to about \$34,000.

In the statement of earnings and expenses it is shown that the gross earnings of the iron department fell off from \$2,951,105.20 during the fiscal year 1892-1893 to \$1,775,562.11 during last year. The operating expenses were \$2,746,444.27 and \$1,630,133.24 respectively, thus showing a decline in net earnings from \$204,660.93 to \$145,428.87. It may be interesting to add that the company wrote off \$26,114.12 for shrinkage in value of iron department supplies and manufactured stock on hand June 30, 1893, which had been carried forward at cost.

The Pueblo works made in the fiscal year 1893-1894 30,728 tons of pig iron, 2588 tons of spiegel, 84,152 tons of steel rails, 9857 hundredweight of spikes and 5823 tons of merchant bar.

The product of coal was 1,338,786 tons, against 2,255,074 tons during the previous year. The coke ovens made 183,246 tons of coke, against 304,506 tons during the previous year. The iron mines yielded 75,645 net tons, against 107,737 net tons.

Throwing High Explosives from Powder Guns.

The tests of the dynamite guns at Sandy Hook call attention to the attempts which have been made to throw high explosives from ordinary guns. The main drawbacks of the pneumatic system are the comparatively short range, the slow flight of the projectile, and the high angle fire which gives a mortar like effect. In using powder in a gun to propel any high explosive, provision must be made for taking up the shock due to explosion. The two best known systems are the Justin and Snyder, which are based on the principle of interposing between the powder charge and the high explosive something that will act as a cushion by taking up the violence of the shock. In Dr. Justin's shell the explosive is surrounded with a compressible absorbent, the whole being packed into wooden boxes inside a cylindrical case called a carrier, which is shorter than the shell and of less diameter, and fitted at top and bottom with leather disks. The shock of firing breaks the wire that holds the carrier in position, and while the shell begins to revolve rapidly the inertia of the carrier is overcome more slowly, so that it is forced to the rear, compressing the air behind it. This compressed air is in turn driven to the front of the carrier through ports in the rear leather disks and exerts the cushioning effect desired.

The Snyder system, in New South Wales, is analogous. At the base of the projectile is a brass cylinder, with solid base and open head, containing a fluted rubber cylinder pierced with about 30 holes. On firing, the pressure of the powder gases shortens the cylinder, compresses the rubber and contained air so as to produce a cushioning effect, while so bulging the cylinder that it takes the rifling of the bore. The base cylinder drops off soon after leaving the muzzle.

Another method, which is most relied upon in Europe, is to procure a high explosive that will not fire by concussion. Mélinite, employed in France, is an illustration. Shells containing 23 pounds, and with the regular propelling charge giving a velocity of 2000 feet, have been safely fired from 6 inch guns. From an 8½ inch gun have been fired shells containing 70 pounds of mélinite with a velocity of 1800 feet per second, and shells containing 121 pounds with 985 feet. In one experiment mélinite shells were fired through both sides of an old French armor clad, making 9 4 inches of armor pierced in all, without bursting. It is known that this explosive is far more powerful than ordinary gunpowder, and all the evidence goes to show that it may be used as safely in powder guns.

The various other countries of Europe have similar high explosives for use in shells. Thus Austria has her écrasite, which is more destructive than dynamite, and of which 16 pounds in an 8½ inch shell have been safely fired from a powder gun and sent through several inches of steel without exploding. England uses lyddite, which resembles mélinite, being of the picric powder type, and Italy also employs it. Sweden has bellite and roburite and bellofite, and other high explosives similarly used. Germany and Russia have employed wet guncotton to some extent as the charges of shells. In our own country the Navy Department has used with much success emmensite, firing charges of 42 pounds of it. A rifle ball

can be driven through a mass of it without producing an explosion, and it has been fired through a 2-inch steel plate before exploding.

The Maxim Flying Machine.

At the Oxford meeting of the British Association, Hiram S. Maxim, the designer of the flying machine described in *The Iron Age* of August 23, stated that his finished engines originally weighed 300 pound each, and that subsequent alterations brought their weight up to 322 pounds; by the various improvements he is able to make the pressure mount from 200 pound to 300 pound in less than a minute; he thought that the engines would actually deliver 400 horse-power on the screw. From experiments he had tried he had come to the conclusion that there is practically no skin friction on a screw running on air.

Professor S. P. Langley of Washington said that the making of a machine which will support itself in air, which he congratulated Mr. Maxim upon having accomplished, is not the greatest difficulty to be overcome in making a flying machine. Supposing his machine not to be guided by rails, but to begin to travel freely in the air, what is to keep it traveling in a horizontal direction? For instance, if he tried to throw the card in his hand across the room, it would require great power and skill to cause it to travel in a horizontal direction after it left his hand. In some experiments he had tried with speeds of 50 or 60 miles per hour he had found skin resistance to be an almost negligible quantity. He had not tried to make a flying machine, nor had he ridden upon that made by Mr. Maxim; he thought that before the close of this century flying machines would have a real existence, but whether they would be commercially successful or navigable without great risk, he would not predict.

Professor Osborne Reynolds stated that it was not usually noticed that there is an absolute limit to the weight which can be raised by any flying machine—namely, that weight of the materials used increased as the square of the increase of the size of the machine. The weight thus increases faster than it is possible to increase the strength. This law, he said, limits the possibilities of flight, but we may remark that this law may act asymptotically, and the absolute limit be a long way off. Birds are limited in size by this law; he thought the weight of the largest flying bird to be about 60 or 70 pounds. Mr. Maxim had been successful in getting power enough on a machine to lift 8000 pounds. The wings of birds vary in dimensions according to their weight and to the distances over which they habitually fly. The French partridge cannot fly slowly, its wings being so small in proportion to its size; birds which fly long distances have long wings. He thought that for actual flying by machinery the speed would have to be more like 200 miles an hour than the speeds with which Mr. Maxim had been dealing, and that at high velocities the amount of skin friction would be serious.

It is interesting to note that the experiments of Mr. Maxim will be continued. In a communication to *Industries* he says:

"I beg to state that my experiments have only just commenced. After having succeeded in making a machine which will actually raise itself from the ground, I have not the remotest idea of

abandoning experiments which so far have been successful."

You say, "Mr. Maxim's aerial enterprise has failed." I started out at Baldwyns Park to prove that a flying machine could be made which would have sufficient power in it to lift itself from the earth. I have not tried to do anything but this, and I have succeeded.

I also note the following:

"To imagine this machine serenely pursuing its course through a gale, or even buffeting its way through a stiff breeze, is to imagine a spectacle which the mind repels as an impossibility." I receive a great many letters from would be inventors of flying machines, balloons, &c., and whenever I find any expression such as a "side wind striking the machine," or "a head wind," I make up my mind that the writer knows nothing of the subject of which he is writing. A common house fly can buzz about the inside of a railway carriage while the train is traveling at the rate of 60 miles an hour. As far as the fly is concerned the carriage is stationary. When a flying machine is once clear of the earth, and is high enough above the surface not to be influenced by the eddies caused by the trees and houses, it is sailing in an element which is quite independent of the earth. It travels through the air in any direction exactly at the same velocity—no matter which way the wind is blowing—just the same as the fly buzzes about in the railway carriage, quite independent of the apparent motion of the trees and houses that may be seen through the windows of the carriage. A flying machine traveling at the rate of 40 miles an hour will always have an apparent head wind of 40 miles an hour whether there be a calm, a stiff breeze or a hurricane, and will never have a side wind. With such a machine and a gale of 40 miles an hour, if the machine were sailing against the wind it would naturally keep over the same spot all the time, and by changing the angle of its sails it could fall slowly in a vertical line to the earth.

Aluminum on Glass.

L'Industrie states that M. Charles Margot of the University of Geneva has found that by rubbing on glass with an aluminum point we obtain clear metallic lines, which cannot be removed by washing, no matter how often repeated. This property which aluminum possesses, of adhering closely to glass, or in general to any substance having silica as a base, is most plainly shown when the surface is dampened or covered with a very light coat of moisture, as, for instance, when a man breathes upon the surface of the glass. An indispensable condition is that the glass and the aluminum point shall be clean. It is known that magnesium, cadmium and zinc have similar properties, and that they will leave visible traces on glass. None of these metals, however, possesses this property to the same extent as aluminum, except possibly magnesium. On the other hand, besides the fact that magnesium oxidizes very quickly, the traces which it leaves on glass vanish quickly, and therefore the metal can be used for this purpose only under special circumstances. Many applications can be suggested for aluminum in this direction. It can be used instead of the engraver's tool in cutting designs on glass. With the aluminum pencil diamonds can be distinguished from imitation, since it will make no mark on a diamond.

HARDWARE.

Condition of Trade.

THE IMPROVEMENT in trade noticed for some weeks past still continues. There is nothing to complain of in the number of orders received, but quantities are smaller than they ought naturally to be at this season, although larger than they have been for some time past. It is still impossible to get particulars of the effect of the new tariff on the prices of the majority of imported articles. The only change definitely made as yet is in German Chain, of which we print the new prices elsewhere.

Chicago.

(By Telegraph.)

Shelf Hardware jobbers report a broader demand for goods than at any

over 40 per cent. in the first half of August in comparison with the same period of last year. Texas is buying very heavily. The railroad fare from Texas points to St. Louis is at present 95 cents, so that the city is crowded with Texas merchants who usually do not visit the city until October. The demand for fall and winter goods is commencing to make itself felt and a noticeable feature of the situation is the increase in the size of orders received. Retailers are more inclined to order in large quantities than they have been for many months past. The new tariff does not affect the Hardware trade very materially, the cutlery line being apparently most affected. Jobbers are rearranging their prices to conform with the bill which has just become a law, and no great amount of confusion is expected. Collections are keeping up in good shape. The demand for Galvanized

to 95 cents for carload lots on dock. The store price for small lots in New York is \$1.05 to \$1.10.

Chicago, by Telegraph.—Business shows a slight improvement in the demand from factory, but there is little disposition to make contracts for future delivery. Prices are continued at 95 cents, Chicago, on 60 cent average. Small lots from stock are quoted at \$1.10 to \$1.15.

Barb Wire.—Now that tariff uncertainty is over a stronger feeling characterizes this market, and makers seem to expect a gradual advance, although there is still some shading of prices. The following are the quotations for Four Point Galvanized, delivered at the points named: Pittsburgh, \$2 to \$2.05; Cleveland, \$2.05 to \$2.10; Cincinnati, Allentown, Chicago, or New York, \$2.20 to \$2.25.

New List of German Bright Coil and Machine Chain, Halter Chains, 4½ and 6 feet, and Cow Ties, Adopted August 28, 1894.

No.....	6/0	5/0	4/0	3/0	2/0	0	1	2	3	4	5	6	7	8
Halters, 4½ foot.....			\$7.00	\$5.70	\$5.10	\$4.50	\$4.20	\$3.85	\$3.70	\$3.50	\$3.40	\$3.40	\$3.40	\$3.40
“ 6 “.....			9.00	7.25	6.50	5.75	5.40	5.10	4.70	4.50	4.30	4.20	4.20	4.20
Coil, straight or twisted link.....	\$12.50	\$10.75	9.50	7.75	7.10	6.60	6.20	5.85	5.60	5.40	5.30	5.20	5.20	5.20
Machine Chain.....	17.00	15.00	13.50	12.25	11.50	11.00	10.50	10.00	9.70	9.70	9.70	9.70	9.70	9.70
Cow Ties, No. 48.....			4.25	3.75	3.30	3.10								
“ 42.....			4.50	4.00	3.75	3.50								
“ 40.....			4.25	3.75	3.30	3.10								
“ 49.....			4.50	4.00	3.60	3.40								

time since last spring. Merchants are buying only in small quantities, but their orders are more numerous and coming from a greater number of localities. They are not disposed to take in stocks to any great extent, yet inquiries are being received more freely for carload lots of staple goods. Some jobbing houses report that their business is larger than at any previous time this year, while others admit that trade is considerably better than it has been, but state that it is not yet up to normal conditions. A notable improvement has taken place in heavy Hardware. The demand for Iron and Steel has grown very considerably within the past week. Inquiries are larger, and quantities taken show some indication among consumers of Iron and Steel to lay in better stocks. The demand for wagon and carriage material, however, is light.

St. Louis.

(By Telegraph.)

There is a decided improvement in the demand for Hardware. All the local houses report substantial increases in comparison with August of last year, one house showing a gain of

Iron, Black Sheets, Tin Plate, Copper and Copper Goods shows decided improvement.

Notes on Prices.

Wire Nails.—The demand is quite active, and if the same condition prevails for the next fortnight it is generally thought that all the mills will be running full or nearly so. Quotations for carload lots at mill continue at \$1 to \$1.05, but for desirable lots these prices can be shaded, and sales have been made on private terms considerably under these figures. The New York price for small lots is \$1.20 to \$1.25.

Chicago, by Telegraph.—Manufacturers appear to control the situation and are receiving larger orders and better inquiries. Prices are continued at \$1.15 to \$1.17½, Chicago, for factory lots, while jobbers quote small lots from stock at \$1.20 in a regular way, with concessions to best buyers.

Cut Nails.—The improvement in demand previously noted continues without change in prices. We quote as representing the Eastern market 90

Chicago, by Telegraph.—Manufacturers are in receipt of a good run of mail orders, but they are almost wholly for small lots. Carload buyers are rare even in localities in which dealers usually lay in large stocks. It is expected that the demand this fall will be principally of this character. Under such circumstances the trade is likely to fall more in the hands of manufacturers than jobbers, although the latter report a much better movement. Prices are unchanged at \$2.35 for small lots of Galvanized from stock, and 10 cents off for carloads.

Wrought Iron Pipe.—There is less disposition to press sales. Makers have sold considerable Pipe and their views are firmer than at our last writing.

German Chain.—Hermann Boker & Co., Wiebusch & Hilger, Alfred Field & Co., Vom Cleff & Co. and Joseph F. McCoy Company, importers, in order to conform to reduced cost of importation under the present tariff have adopted a new list for German Bright Coil, Machine and Halter Chain and Cow Ties, which will be found elsewhere on this page. This list takes effect at once,

and is subject to a discount of 60 and 10 per cent. on Coil and Halter Chain and 40 per cent. on Machine Chain and Cow Ties.

Bolgiano's Hot Air Gas Irons.—Bolgiano Mfg. Company, 415 Water street, Baltimore, Md., are selling their Hot Air Gas Irons from the following list, which is subject to a discount of 30 and 10 per cent. to the trade:

	Each.
Kitchen Iron.....	\$2.00
Tailors' Iron.....	3.00
Soldering Iron.....	2.00

A description of the Kitchen and Tailors' Irons was given in our issue August 2.

Steel Bar Carpenters' Clamp.—This Clamp was described in our issue, 16th inst. It is put on the market by E. C. Stearns & Co., Syracuse, N. Y., who are selling it to the trade from the following list, subject to a discount of 25 per cent.:

Feet.	Per pair.
3.....	\$4.00
4.....	4.50
5.....	5.00

Feet.	Per pair.
5.....	\$7.50
6.....	8.50
7.....	9.50
8.....	11.00
9.....	12.50
10.....	14.00

Cordage.—Manufacturers' quotations remain unchanged, but jobbers are endeavoring to force sales of Rope, and

are quoting prices from $\frac{1}{4}$ to $\frac{1}{2}$ cent below those of manufacturers.

Glass.—During the past week jobbers have experienced a better demand for Glass, and in quantities larger than have characterized orders for some time past. It is generally understood that jobbers control the larger portion of American Window Glass, and that A quality of Glass is becoming scarce. Factory prices have been weak for the past two weeks and are not as yet favorably affected by the slight increase in demand.

Up to the present time no agreement has been arrived at regarding wages for the coming fire, although meetings have been held between the wage committees of manufacturers and operators. The tariff bill becoming a law has not affected the price of imported Glass, and probably will not at present. It is reported that some of the American Window Glass factories will begin making Glass September 1, but this will probably be the exception rather than the rule. The demand for Plate Glass continues satisfactory, and manufacturers report new orders. Pittsburgh factory quotations, which are shaded in some instances, are as follows: Single strength Glass, 80 and 20 to 85 and 5 per cent. discount; double strength Glass, 85 and 10 per cent. discount; Plate Glass, Eastern list, 70 to 70 and 10 per cent. discount, according to the size of glass; Imported Window Glass, 80 and 10 per cent. discount.

the manner in which they fit their frames. They come to us knocked down, and any man that can put one together, especially in a hurry without violating one of the Commandments is a good one. The frames will not fit the holes, for the bolts are too small and are bored at random. The threaded nut in the stone is full of hard cement, &c. On the whole, they are the meanest thing in a Hardware store that the assistant has to contend with. I might say the same of Washing Machines, although they are not as bad. If I were boss I would buy mounted Stones of some manufacturer who sends them out right.

An Unsuccessful Venture.

A business man of prominence in an interior city refers in the following communication to his experience in connection with an unsuccessful enterprise in which he was persuaded to engage. We presume that many of our readers can sympathize with him in the result of the venture:

I had no conception how much the world worshiped success until I had met with some severe losses. For a score of years, so far as the public knew, and also in fact, I had been successful. I had made mistakes and met with losses, but these were not equal to my profits in any one year and neither did I advertise them.

In course of time quite a number of people appeared to be anxious for my advice and I was invited to go into every new enterprise, being almost invariably told that my taking hold would be of value in securing help and subscriptions from others. So common had this become that it long ago had ceased to be a matter of any pride to me. I am afraid that I began to accept myself at the valuation other people seemed to place upon me and perhaps became too confident in myself and my own judgment.

At any rate, I invested in a certain business outside my own line and went in rather heavily. It seemed to have hard sailing, so I took hold of it in rather a prominent way, hoping to pull it through, but it was too much for me, and the concern failed.

The public must have had an exaggerated idea of my losses in connection with this venture, for, as a fact, they did not seriously bother me, though, of course, I did not talk this way. My old friends sympathized with me in a patronizing way, as if mentally adding: "You ought to have noticed that we were not in that venture and have staid out." The people who used to call on me for advice came in now to commiserate with me and advise me not to go into such schemes in the future, and everybody took on very patronizing airs with me and they still treat me in that way.

It is both amusing and humiliating; it teaches that the world is ready to bow down to success but quick to patronize and rather rejoice at a turn in the tide that changes the flood of some one else's prosperity into loss or failure. We are apt to measure ourselves by others and measure others by their success or failure. It will be some time before I regain my position as adviser to the public at large.

Letters from the Trade.

Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.

Warranting Axes.

The questions in regard to the warranting of Axes and Edge Tools is thus discussed by a merchant in Kansas:

Your Michigan correspondent, speaking of abolishing the warranty on Saws, Axes, &c., by dealers, is right, but the manufacturer should be responsible for inferior goods he manufactures. The warranty on Axes, &c., to consumers should be abolished by all manufacturers and ought to be published by them in order to let the mechanic and farmer know that they have done so, otherwise the consumer who expects another Axe for the damaged one he returns will blame the dealer for not exchanging a good one for a bad one, not knowing that the manufacturer will not exchange with the dealer.

I have for several years sold Axes without the warranty. If the purchaser insists upon the warranty I prefer losing the sale. If a good customer has bought an Axe without a warranty, and returns the Axe damaged by a flaw, too soft or too hard, I invariably exchange the Axe. Here I use my own judgment.

This Axe should be replaced by the manufacturer, whether he has abolished the warranty or not. The loss is too much to the dealer, while the cost of this Axe to the manufacturer is very little.

Let the dealer cease to warrant tools and my experience is that very few will return with damaged tools; but if they do, and the dealer thinks it ought to be exchanged, the manufacturer should replace the same, leaving the freight to be paid by the dealer.

The purchaser does not care whether the Axe is warranted by the manufacturer or not. He comes to town with a damaged Axe and expects the dealer to replace it by a new one. If the dealer does not do this it will make the purchaser mad, and he will consequently lose not only his trade, but the trade of some of his neighbors, who will be influenced by him.

The best policy is not to warrant the tools, but if brought back in a damaged condition, and proved by the purchaser that it was not his fault, but the result of a defect, exchange rather than make the purchaser mad. Then charge it up to the manufacturer who has sold to the dealer an inferior article, and if the manufacturer refuses to meet you half way quit buying from him.

Mounted Grindstones.

The following communication from a Hardware merchant in Illinois refers to his experience with Mounted Grindstones, which is perhaps not entirely exceptional:

I wish to call the attention of manufacturers of Mounted Grindstones to

WM. R. GRAEF of Graef & Schmidt, 29 Warren street, New York, agents in America for J. A. Henckels Cutlery, left Bremen for New York August 28. He left here May 1 last, and while much of his time has been spent in Solingen, Germany, he has also combined pleasure with business and visited Switzerland and other countries sightseeing.

The Cutlers' Company of Sheffield.

THE CUTLERS' COMPANY was incorporated in 1624, during the latter part of the reign of James I, but in one form or another it is said to have existed for a great many years prior to that time. As a corporate body the Cutlers' Company of London antedate them about two centuries, but in influence the latter association has never approached it. In the year mentioned the cutlers of Hallamshire, the district of which Sheffield is the center, organized themselves into a body corporate for the protection of the "industry, labor and reputation" of the trade, which was being degraded by the "deceitful and unworkmanlike wares of various persons." The act of incorporation specifies the manufacture of Knives, Scissors, Shears, Sickles and other Cutlery, and provides that all persons engaged in the business shall "make the edge of all steel implements manufactured by them of steel, and steel only, and shall strike in their wares such mark, and such only, as should be assigned to them by the officers of the said company."

Chaucer takes cognizance of the antiquity of Sheffield Cutlery in the following lines written in the fourteenth century, referring to the whittler of Trompington:

A Shefeld thwytel bare he in his hose,
Ronde was his face and camoused was his nose.

This was an allusion to the crude style of Knife then in use, consisting of a blade of bar steel fastened rigidly into a wooden or horn handle. When not needed it was commonly thrust, handle up, into the stocking of the owner.

The incorporation of the Cutlers' Company is said to have been accomplished largely through the efforts of the Duke of Norfolk and Earl of Shrewsbury. In spite of the stringent regulations, pains and penalties, many manufacturers made Cutlery to the order of customers, on which the name of the seller was struck, and very inferior malleable or cast iron blades were stamped "best steel," "London made." These and other deceptions were resorted to frequently.

The company had power to confiscate goods not made in conformity with the stipulated requirements. One instance is mentioned where the officials of the corporation exercising their prerogatives seized a lot of cast iron goods represented as steel, and broke them up with much ceremony in one of the public squares, in the presence of a large gathering of people. Much foreign work is said to have been sent to England to be transhipped and sent abroad as English Cutlery. This practice finally led to the passage by Parliament of the Trade-Marks act, for the protection of the trade against frauds of this character, which result was accomplished largely through Sheffield influence.

PROTECTION OF TRADE-MARKS.

One of the chief functions of the Cutlers' Company has been and still is the registration and protection of corporate and trade-marks, which in Great Britain have much greater significance than obtains elsewhere. The creation of the trade-mark had its inception in the lack of universal education and inability of the masses to read, hence some emblem or device was adopted which all could recognize, despite their inability to read. A manufacturer would select some sign or emblem by which to designate his wares. This would be recorded in the great paper book of the guild as the particular property of the individual or firm concerned. Of course the essence of the whole matter lay in devices not being duplicated or allowed to even closely resemble each other, and rights once properly acquired were thus adequately protected.

In this connection we take pleasure in reproducing on another page the original of a parchment patent issued by the Cutlers' Company in the reign of George III to John Rothery, grandfather of John Rothery, who died October 16, 1893. The latter will be remembered by the older generation of Hardwaremen as the senior member of the well known firm of John & William Rothery, Matteawan, N. Y., who were established in 1835.

OFFICIAL STAFF.

The official staff of the company consists of a master cutler, senior and junior warden, six searchers and 24 assistant searchers, all free men of the company. By the term free men is understood those who have learned the trade from their fathers, or who have served a seven years' apprenticeship with some member of the association. Here it may be said that of late years members have become eligible in certain contingencies upon the payment of a fee of £23. 0/6. The office of master cutler is the highest in the company, and is reached in regular order, commencing as assistant searcher. The duties of the searchers, aided by the assistants, are to examine the records as occasion requires. After serving a term as searcher the member is surely in line of promotion through the grades of warden, becoming in due course master, unless for any reason he foregoes his prerogative. After the master has served a term of one year it is not uncommon for him to re-enter the ranks of assistants, there being, we are told, 10 to 12 ex-masters who did duty as such last year. The officers named are elected every year, nominally by the members of the company, practically by themselves, for the reason that as a rule the members do not come out to vote. This election occurs in August, the master taking the oath of office on the first Thursday in September.

INSTALLATION.

On the day of installation the members assemble in Cutlers' Hall, and march in procession (preceded by the beadle and accompanied by their law

clerk) to the town hall, one of the courts of which is reserved for the occasion. The retiring master takes the chair, and after suitable remarks invests the incoming master with the badge of office—a silver plate, bearing the arms of the corporation, the emblem being about the size of a common saucer. This is suspended by a ribbon around the neck. Just previous to this ceremony the oath of office has been administered by the law clerk. The wardens, searchers and assistants are then in turn sworn in in the same manner. The procession then returns to Cutlers' Hall.

This is a stone building of the Corinthian order of architecture, and was erected by the Corporation of Cutlers in 1823, at a cost of £6500, replacing a structure which had stood for nearly 100 years. The new banqueting hall, built in 1867, at an expense of £9000, is a stately apartment, 100 feet long and 50 feet wide. It is said to rank among the finest rooms in the kingdom. The style of architecture of the new hall is the Italian. From floor to ceiling it is 50 feet high, with side columns, entablature, and a coved ceiling, the light being entirely derived from the sides over the entablature. In 1888 further additional alterations were made, including a new house for the beadle, offices and other rooms on the ground floor, and on the upper floor a large new drawing room. There were also several improvements in the way of corridors and ladies' gallery, together with an additional staircase connecting the lower and upper hall.

CUTLERS' FEAST.

The company having arrived at Cutlers' Hall, after the ceremonial described, they partake of a curious compound called browis, a sort of soup with oatcake floating in it. It is thought this browis was originally the Cutlers' Feast, being intended to strengthen the partakers for the arduous duties to follow. This repast is sometimes referred to as a "little go," distinguishing it from the main feast later, which has become a national affair, with distinguished guests present from home and abroad.

The company then go to the parish church, where a sermon is preached to them. For the last two years the Cutlers' Feast has been celebrated the night of the first Thursday in November. This innovation has been brought about by several causes, among which has been the difficulty of securing notables as guests at the regular date, which had come to be rather out of season.

This function ranks next in importance to the Lord Mayor's banquet in London. Indeed, it has come to be known as the Banquet of the North. As at the London Lord Mayor's banquet, the Cutlers' Feast is generally regarded as an occasion on which some interesting utterances on the topics of the time, or on the policy of the existing Government, may be looked for from the members of the Cabinet who are pres-

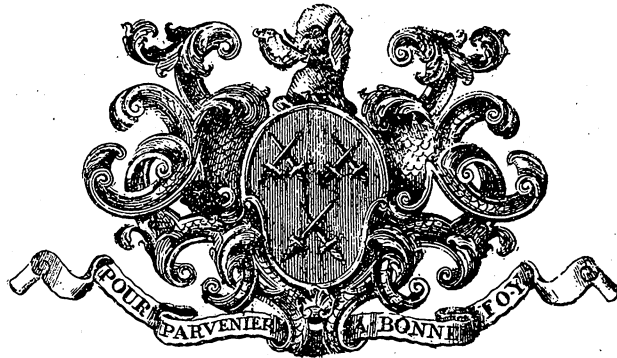
ent. Something like 500 guests usually sit down, embracing dignitaries of the kingdom, with representatives from the Church and from many of the prominent commercial bodies. At the last dinner were statesmen, peers, members of Parliament, distinguished naval and military commanders, emi-

given for the purpose of meeting the expenses of his office for the year. As a matter of fact the recipient congratulates himself if he gets off with an expenditure of about £1000 for the banquet alone, not to mention the almost numberless subscriptions, funds, &c., he is by custom expected to head.

At first the manufacturers of Cutlery and other tools with a cutting edge were the only ones interested, but gradually the leading metal trades of the town of Sheffield have been admitted.

TRADE-MARKS.

Among the well-known trade-marks



The Stamp Duty is on the Book as the Act of Parliament directs.

*John Rothery the son of Joseph Rothery
And Apprentice of John Crookes of
Sheffield in the County of York Maker of Files
was admitted by the Master, Wardens, Searchers, and Assistants
of the Company of Cutlers in Nottingham in the County of York the
Thirtieth Day of October in the
Year of the Reign of our Sovereign Lord
George the Third by the Grace of God
of Great Britain, France and Ireland, King defender of
the Faith and so forth and in the Year of our Lord One Thousand
Seven Hundred and Ninety Five in the Town of
Mr William Birks Master of the same Society and
entered in the Great Paper Book under the Title of ADMISSIONS
OF FREEMEN.*

Memorandum That the Day and Year above said the Mark Stamp
in the Margin and impressed on the Lead to these presents
annexed was aligned according to the Form of the Statute by
the Master, Wardens, and Searchers of the said Society to the
aforesaid John Rothery to mark his
Files by him to be made To HOLD
him during his Life paying therefore yearly to the said
Master, Wardens, and Searchers and their Successors during the
said Term for the use of the said Society the Sum of Six Pence
at the Feast of Pentecost only.

1725

Well Birks



ment divines, &c., including American Ambassador Hon. T. F. Bayard and others in the diplomatic and consular service.

One of the time honored customs is a donation by the company of 200 guineas to the master cutler, which is

It may not be generally known that the master cutler elected in 1893, J. F. Atkinson, was Chief Judge of the Cutlery Exhibit at the World's Columbian Exposition at Chicago. Mr. Atkinson spent several months traveling about the United States.

are those of Joseph Rodgers & Sons and the outline of a clay pipe granted to the predecessors of George Wostenholm & Sons in 1694, which is best known in connection with razors. In olden times each manufacturer could have but one mark for all the wares

he produced, but as time passed and the standard of intelligence was raised letters were added to the emblems or arbitrary signs so long used. An instance of this is the well-known I X L, originally granted to some one unknown, but which came into the possession of the Wostenholms over 100 years ago.

At a meeting of the Cutlers' Company, held August 7, the Master Cutler, George Howson, presiding, the following officials were chosen for the ensuing year:

Master Cutler, Charles Henry Bingham of the firm of Walker & Hall; senior warden, H. Herbert Andrew; junior warden, Maurice George Rodgers; searchers, Alexander Wilson, F. C. Wild, A. J. Hobson, Harry Allen, R. A. Hadfield and R. G. Holland. The following were appointed assistant searchers: George Howson, J. F. Atkinson, R. Belfitt, R. Colver, S. G. Richardson, S. E. Howell, J. Dixon, G. F. Lockwood, C. Belk, J. E. Bingham, George Barnsley, W. Chesterman, J. B. Jackson, W. H. Brittain, Sir John Brown, J. D. Ellis, A. R. Ellin, M. J. Hunter, T. W. Sorby, David Davy, B. A. Firth, W. F. Osborn, H. H. Bedford and Sydney Jessop Robinson.

The installation of the new master was set for September 6, and Thursday, October 25, fixed as the date of the next annual cutlers' feast, which is a week earlier than last year's banquet. A vote of thanks was tendered Charles Belk for his present of two handsome brass tablets, on which are engraved the names of the past masters of the company.

Export Notes.

F. PORTER THAYER, 16 Warren street, New York, export manager for Aultman, Miller & Co., Akron, Ohio, and P. P. Mast & Co., Springfield, Ohio, manufacturers of Agricultural Machinery, left San Francisco, August 23, on the steamer Alameda, for Sydney, New South Wales. After visiting the trade centers in Australia and New Zealand he will go to Cape Town and other points in South Africa and return to America via London. Mr. Thayer completed a ten months' trip to Australia about a year ago, and since then has visited England, the River Plate ports, including Montevideo, Buenos Ayres and Rosario and points on the West Coast of South America, in a trip begun November 25, 1893, and ended April 1 last.

W. C. Barker, 69 Beekman street, New York, is going to Europe early in September on an extended trip of some months' duration in the interest of associated manufacturers of Agricultural Machinery, a number of whom he has long represented for export. He will visit all Europe, possibly excepting Turkey and Spain, and also go into Algiers in Northern Africa. The ex-

position at Chicago drew from prospective foreign buyers many inquiries as to whether corresponding results, witnessed by them there, could be accomplished by the same makes of machinery on their own native soils. For the purpose of practically demonstrating this fact suitable articles have been shipped abroad, and will be operated in competitive trials against similar goods of English and German manufacture.

Your Partner's Son.

BY A PARTNER.

MY PARTNER had a son, a fellow without tact or "gumption," a failure at school among boys of his own age, and yet without the sense to know that he was a failure. His father said to me: "I want to bring John here where I can make something out of him. He is doing no good at school and I want to have him where I can make him toe the scratch every time. There will be no charge for his work and I'll make him begin at the bottom."

We are jobbers of Hardware with a good business. It has been my part to look after the running of the store more than it has my partner's. I felt that the burden of the boy's training was coming on me. I did not like the plan at all, yet it seemed unkind to object, and I thought if I had a boy I would probably want him in my own store.

So John came. He was a failure in himself and he made trouble with the others. He was pushed along into the order department long before he had shown any fitness as a packer and shipper, and he rarely got out an order but that he made a blunder.

His father was either too harsh with him one day, so that we could not help but pity him, or passed over his blunders the next day as if they were of no consequence. He was with us two years before I finally insisted upon his being sent away, and those two years were as harmful to him as they were annoying to the rest of us.

He went to work for another house, had to do his work as it should be done, was advanced very slowly and is now a successful salesman on the road. That is to say he is paid a moderate salary and earns it.

When one member of a firm brings a son or other relative into the store he is taking unfair advantage of his partner, unless the young man is going into a department in charge of his father, where no one else will be annoyed by his failures.

The parent cannot, in the very nature of things, deal with his son as he does with other clerks, and the boy is rare who does not assume airs because he is the son of his father, rather than because he has proven himself to have ability.

A man cannot have one rule for his son and another rule for other clerks in the same department, consequently if the boy is not up to the average de-

manded hitherto, the average is allowed to fall because of him.

Whether your partner shall bring his son into the store or not is a question that you should decide, not he. You have been watching the boy and have made your estimate of his disposition and ability. If you see that his coming will not lower the discipline of the store, that he will not assume liberties because of his connection with one of the firm, you ought to suggest to your partner that you are willing the boy should be given a place.

It is a delicate question for you to answer if you wait for him to ask you if you would rather not have the boy; but it will cause vastly less trouble if you say, then and there, that you would rather not see the boy brought into the store, for if he is what you think it will make more trouble between you later.

Many partnerships are dissolved because of trouble growing out of partners' children. The sore spot having once started it rarely ever heals of itself, but grows larger until no physician can cure it.

If you agree with me thus far, how is it, supposing that it is you and not your partner who has the son? Are you sure that you are not imposing upon his good nature, and that you are not overlooking things in the young man because he is your son that you would not think of doing if he was not? Are you sure the boy is getting the training that would be his if in another store? Put yourself in your partner's place while you consider the situation, and then act.

Stout Mfg. Company.

THE STOUT MFG. COMPANY are operating a well equipped factory at 197 South Canal street, Chicago, making Curling Irons. Their specialties are the Automatic Revolving Iron and the Simplex Hair Curler. In the use of these Irons the rod turns, thus avoiding the constant turning of the wrist in curling the hair. It is the intention of the company to gradually increase their line of goods by producing other patented specialties in which novel features are introduced. Newton Andrews is the president and general manager of the company.

Mossberg Wrench Company.

MOSSBERG WRENCH COMPANY, Attleboro, Mass., recently commenced the manufacture of a line of Hardware Specialties consisting of a small Wrench especially designed for Bicycle use, but adapted to other purposes as well, and the American Knife Sharpener, an inexpensive device for the sharpening of household Knives and Shears. Other articles are in preparation. The officers of the company are: S. W. Wardwell, Jr., president; Frank Mossberg, vice-president and general manager; C. H. Williams, business manager and representative on the road. The policy of the company will be to recognize the co-operative worth of jobbers, and their product will be marketed through them. Mr. Williams

will do the selling for the present in order to extend his personal acquaintance with the trade. It is stated that no article will be manufactured upon which the company cannot place an absolute guarantee.

Trade Items.

WITHINGTON & COOLEY MFG. COMPANY, Jackson, Mich., call attention, in their advertisement, to their line of Farm and Garden Tools. Among those specially mentioned are Forks, Hoes, Garden Rakes, Potato Hooks, Scythe Snaths, Grain Cradles, Handles and Wheelbarrows. Illustrations of some of the Tools are also given.

THE NAME of the corporation heretofore known as the Oliver & Roberts Wire Company, Pittsburgh, has been changed to Oliver Wire Company. No other change has occurred in the management or organization of the company, and their business will be conducted in the same manner as heretofore.

S. R. DROESCHER, 58 Warren street, New York, importer of specialties in Hardware and kindred lines, has just received a shipment of fine Turkish Oil Stones, suitable for carpenters' use in whetting Edge Tools.

R. W. ROGERS COMPANY, manufacturers of Silver Ware, Niagara Falls, N. Y., until recently doing business as an association, were on August 15 last incorporated under the same name. The officers are: R. W. Rogers, president; F. F. Spyer, vice-president and selling agent; W. A. Jameson, secretary and treasurer. The company manufacture a line of Flat Ware, such as Spoons, knives, Forks, &c., silver plated on what they warrant to be 21 per cent. nickel silver. They contemplate adding a line of Hollow Ware sometime in the future. They have located their New York office at 88 Chambers street.

HERMANN BOKER & Co., 101 Duane street, have just been made the sole agents for the sale of the Stephens Vise, the headquarters of which have long been at 41 Dey street in this city. This well-known article, now made by Melvin Stephens, the manufacture of which was begun in 1864, we are informed by the maker has reached a total output of 100,000. Thirty five medals and diplomas have been obtained from various foreign and domestic trade exhibitions where they have been shown, and we are told as many as \$10,000 worth at a time have been purchased by the United States Government for the use of the Navy.

THE READING HARDWARE COMPANY, Reading, Pa., have taken advantage of the dull times to work steadily on new patterns of goods, and as a consequence their pattern shops have been active for some months. They have a very complete new catalogue of Builders' Hardware in the press, which, besides illustrating their general line, will show the position they have attained in the manufacture of Art Hardware. The company are about to extend their export trade, and the indications are that they will be able to build up a foreign trade which will form no inconsiderable part of their business.

Price-Lists, Circulars, &c.

SYRACUSE SPECIALTY MFG. COMPANY, Syracuse, N. Y.: Curry Combs, Lawn Rakes, Hose Bands, Raw-hide Ferruled Mallets and Chisel Handles, &c. A 54-page catalogue illustrates these goods with de-

scriptions. The manufacturers call attention to the fact that they do not use iron castings in the construction of any of their Combs except for Mane Combs. Surpluss, Dunn & Alder, 15 Murray street, New York, are direct representatives of the company.

BLISH, MIZE & SILLIMAN HARDWARE COMPANY, Atchison, Kan.: Fall and winter catalogue of seasonable Hardware. This illustrated price current shows Axes, Cross Cut Saws, Corn Knives, Husking Gloves, Parers, Presses, Meat Cutters, Coal Hods, Stove Polish, Hollow Ware, Lamps, Lanterns, Skates, Stove Boards, Wringers, Implement Sets, Ammunition, Revolvers, Carvers, Flat Plated Ware, &c.

THE PHILADELPHIA DROP FORGE COMPANY, American and York streets, Philadelphia: Standard Machine Wrenches, Spanner Wrenches, Steel Set Screw and Steel Tool Post Wrenches, Hoist Hooks, Swivels or Rope Sockets, Eye Bolts, Machine Handles, Shafting Collar Blanks, Thumb Screw and Thumb Nut Blanks, Keystone Open Links, Fence Pickets, Rosettes, &c., Drop Forgings for Bicycles, &c. The catalogue, containing 20 pages, is copiously illustrated, and is accompanied by a slip directing special attention to the pages showing recent additions to their line, and to the reductions in their list prices on regular goods.

LOUIS ROSENFELD & Co., 20 Warren street, New York: Hy-Lo Bicycle Gear. A pamphlet explains the use of the Hy-Lo Gear, which is adapted to fit any wheel, and also gives a table of Gears. The Gear is designed to make hill climbing comparatively easy and is fitted to any make of machine by the company.

THE STANDARD TOOL COMPANY, Cleveland, Ohio: Spring Cotters and Flat Spring Keys. List prices of these goods are issued, which is a new line manufactured by the company. They state that the Spring Cotters are made by special machinery, that they are highly finished, extra well pointed and shaped.

TOM MOORE, 1367 Broadway, New York: Stable Fittings. Illustrated Catalogue A, of Iron, Brass, Bronze and Wood Stable Fittings, shows Iron Mangers, Hay Racks, Stall Post and Fixtures, Lattice Guards, Box Stall Bolts and Locks, Hitching Devices and attachments, Stall Gutters and Cesspools, Oiling and Washing Brackets, Harness and Saddle Brackets, &c. A price-list accompanies the catalogue.

HARTLEY & GRAHAM, 313-315 Broadway, New York: August price-list for dealers only. A catalogue of 132 pages is devoted to Guns, Revolvers, Ammunition and Sporting Goods, including the products of the Union Metallic Cartridge Company, the Bridgeport Gun Implement Company and the Remington Arms Company. The catalogue is fully illustrated, showing lines of the goods mentioned. The company state that it is their intention to protect their customers and the trade in general in every possible manner, and that it has long been their custom to refer all inquiries from consumers to local dealers.

LOGAN, GREGG & Co., Pittsburgh, Pa.: Semi-annual catalogue of seasonable goods for the fall and winter trade of 1894-5. The price current of 48 pages is accompanied by a discount sheet, and illustrates Guns, Revolvers, Ammunition, Oil and Gas Heating Stoves, Fenders, Stove Boards, Shovels, Pokers, Fire Irons, Lanterns, Meat Cutters, Skates, Sleigh Bells, Axes, Saws, Wheelbarrows, Weather Strip,

&c. The company give special attention to mail orders, giving them the advantage of their best prices and most prompt shipment.

THE STORM MFG. COMPANY, Newark, N. J.: Elevators and Dumb Waiters. A circular devoted to these goods directs attention to their line of Elevators for stores, with lifting capacities from 500 pounds to 3 tons, for either hand or belt power. The company suggest the handling of Dumb Waiters and Elevators by the Hardware trade to be sold as any other line of Builders' Hardware.

ROBERT MURPHY, Harvard, Mass.: Dame, Soddard & Kendall, Boston, sole selling agents: Cork Screws, Paper Hangers', Oyster and Shoe Knives, &c. An illustrated catalogue and price-list are devoted to Knives, Butter and Cheese Triers, Wood Turners' Parting Tools, Pinking Irons, Eel Spears, Cork Screws, &c.

THE SCHNEIDER & TRENKAMP COMPANY, Cleveland, Ohio: Reliable Gas Heaters, Parlor Grates and Radiators. An illustrated catalogue and price-list of 47 pages show these goods in a large variety of styles and sizes, adapted to the use of coal, water or natural gas.

MILLERS FALLS COMPANY, 93 Reade street, New York, and Millers Falls, Mass.: Tools, &c. Catalogue No. 24 gives illustrations and prices of Braces, Automatic Boring Tools, Hand and Breast Drills, Vises, Jack Screws, Lathes and Saw Attachments, Bracket and Hack Saws, Boring Machines, Levels, Carving Tools, Tool Holders, Glass Cutters, Hollow Augers, Miter Boxes, Wagon Jacks, Anvils, Blind Openers, &c. The catalogue will be sent free by the company to any dealer upon application.

It Is Reported—

California.

That Parker & Clappitt, Hardware merchants, PERRIS, have opened a branch store at HEMET.

That J. V. Akey, Hardware, &c., SOUTH LOS ANGELES, has sold out to R. W. Wood.

Colorado.

That the Holmes Hardware Company, PUEBLO, are about to erect a storehouse, 75 x 100 feet.

District of Columbia.

That Louis Hartig is now conducting the business formerly carried on for a number of years by his father, Gustav Hartig, at Seventh and K streets, N. W., WASHINGTON. Mr. Hartig died on June 19, aged 63 years.

Illinois.

That Arnold Brothers, CHENOA, will soon re-enter the Hardware business.

That Riggs & Son, CABERY, have sold out.

That Crumbacher & Bechtel of COLFAX have dissolved partnership.

Indiana.

That F. Warriner has retired from the Seavey Hardware Company, FORT WAYNE, and his interest has been purchased by James H. Leonard, who will assume the management of the company's retail business. The style of the firm will remain as formerly.

Iowa.

That G. L. Miles has bought a half interest in James Rule's Hardware business, and about October 1 the new firm will open up with a largely increased stock of Hardware in the new store on Broad street, GRINNELL. Mr. Rule continues the business at present on Main street.

That James & Lewis is the style of a new Hardware firm which will soon be started at OXFORD.

That D. A. Burkhalter has succeeded to the business of W. A. Gardner & Son of LEWIS.

That Murphy & Cross, in the Hardware business, at SHENANDOAH, have dissolved.

That J. M. Wetherbee's Hardware store, at WEST UNION, has been burned out.

Kansas.

That the Clippinger Hardware Company, NEMAHA, have been organized with a capital of \$10,000. A. B. Clippinger is president and L. T. Mayhew secretary and treasurer.

Maine.

That A. P. Gould has opened a new Hardware store at AUGUSTA.

Massachusetts.

That E. C. Gardner & Co., NEWTON, will open a new Hardware store about September 1.

Michigan.

That the Hardware stores of Henry Loss and Calvin & Cozad at WAYNE were robbed on the 20th inst., the entire stocks of Pocket Cutlery and Revolvers being taken.

That Thomas D. Roy, Hardware, &c., KINGSTON, has sold out.

Minnesota.

That Louis Albrecht has purchased the Haneman Hardware stock at LESTER PRAIRIE.

That N. Weis is the successor of Weis & Theissen, MANKATO.

Nebraska.

That Young & Henderson, in the Hardware business at BERWYN, have been dissolved.

New York.

That the Hardware store of D. S. Johnson, at COLLEGE POINT, was damaged by fire on the 18th inst. The cause of the fire is unknown. The loss is estimated at \$300.

That A. B. Cutting's Hardware store, at GOUVERNEUR, was robbed a short time since during the passage of a circus parade.

That the Hardware store of Kelly & Sheridan, at AMSTERDAM, was burglarized on the 15th inst.

That Newton Davis of EDDYVILLE will open a Hardware store in his new building.

Ohio.

That N. J. Benedict, Hardware merchant, at 1137 St. Clair street, CLEVELAND, is remodeling his building. The front will be entirely new and modern and the basement will extend the full length of the building.

That for the second time within a year the Hardware store of Church Bros. & Weld, MARYSVILLE, was broken into on August 16 and robbed of a quantity of Revolvers and Pen-knives.

That the PORTSMOUTH Hardware stores of John Baron and J. C. Hibbs & Co. were recently robbed.

That P. R. McDonnell's Hardware store, at LATTY, was recently damaged by fire.

That Amos Bigley, Hardware merchant, at RISING SUN, has sold out to C. P. Bigley.

Pennsylvania.

That Olie Meek has purchased S. S. Grieb's Hardware store at STATE COLLEGE.

South Dakota.

That A. F. Dring, Hardware dealer, WOONSOCKET, has sold out.

Utah.

That the style of the Hardware firm of Darcy & Gwilliam, PARK CITY, has been changed to M. C. Darcy & Co.

Wisconsin.

That the Rundle Hardware Company of OSHKOSH have filed articles of incorporation. The capital is \$8000, and the incorporators are Joseph P. Rundle, John D. Bowers and Charles L. Rundle.

That R. Fontaine's Hardware store, at GREEN BAY, was broken into on the 20th inst. and considerable valuable Cutlery taken.

That Dobbin Bros., Hardware merchants, NEWBURY, have dissolved partnership. G. D. Dobbin will continue the business at the old stand.

The Hardware trade throughout the country are requested to report business changes, improvements and other matters of trade interest suitable for mention in this department.

Oils and Turpentine.

Linseed Oil.—City crushers have made no changes in their quotations. They still ask 54¢ for Oil produced from domestic seed and report sales on that basis. Some out-of-town brands have been sold at 50¢, however, and more, it is stated, could be secured at the same rate. In other words, the market has the peculiar uncertain appearance for which it is renowned, and the stability of present prices is by no means certain. Rumor has it that city crushers and the Western combine are more than inclined to combat outside competition in the usual way. At best the market is an unsettled one, and the final result is quite problematical, being dependent upon the stability of the speculation in raw material, which has taken a ragged course during the past week.

Cotton Seed Oils.—It is a case of "between hay and grass" in the market for this article. The usual late August Seed crop stories have been circulated and it would appear therefrom that there might not be enough Oil to satisfy ordinary demands. Home and export dealers have heard something similar before and consequently they are not alarmed. Prices have undergone some turn for the better being now on the basis of about 29¢ @ 30¢ for prime Crude and 33¢ for prime Summer Yellow, on the spot.

Lard Oil.—City pressers have marked their prices up to the basis of 58¢ for Prime City, owing to higher cost of raw material. The lower grades of Oil are also somewhat higher. Business has been of only fair volume, however, and there is no particular life to the demand.

Fish Oils.—Crude Sperm Oil has been quite active in the East. About 1500 barrels were disposed of, the most, if not all, of which went to home buyers. The price is understood to have been slightly under 60¢. Whale and Menhaden Oils are without decided change, but the markets have a rather soft appearance. Pressed and Bleached Oils are moving to a fair extent at old prices.

Spirits Turpentine.—The combine in "Turps" have a rather tiresome experience. They have secured no actual orders outside of commonplace lines, although professing to accomplish great things, and prices have moved in a direction contrary to that upon which the combine calculated. Latest sales have been at 28½¢ for Old Dominion barrels, 28¼¢ for regular Southern, and 29¼¢ for machine made barrels.

The Siberian Stove Poker.

The Union Plating & Mfg. Company, Freeport, Ill., are putting on the market a new stove poker with a coiled wire handle. In construction a slot is cut in the end of the poker, in which is inserted the end of the coil, after which the slot is closed by pressure, holding the coil firmly in position. The poker is full nickled, and is furnished with either straight or bent ends.

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The American Time Recorder.

The New National Time Recorder Company, Milwaukee, Wis., are offer-

the impression is made by the registering keys. By looking on the right of the dial, Fig. 2, it may be seen at any time of the day by the employer, or any one interested, that No. 2 was 15 min-

uting that a registration has been made. Within 15 minutes after the registrations have been made they come into full view as the cylinder revolves, and remain in view for about five and a half hours. The makers remark that they use the best eight-day movement made by the Seth Thomas Clock Company, which is sufficient guarantee for accuracy. The recorder described will register 100 employees, and by using a number of recorders, as many as 1000 can register, the numbers coming consecutively. The low price at which the recorder is sold is a feature emphasized by the manufacturers.

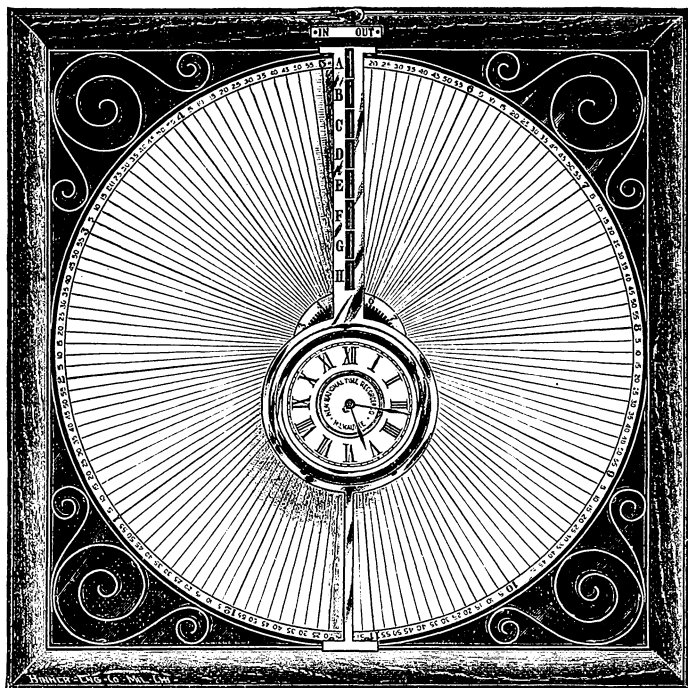


Fig. 1.—The American Time Recorder.

ing a time recorder, as illustrated herewith. The recorder is shown complete in Fig. 1, and will take a 21-inch

utes late; No. 9, 10 minutes late, and that No. 10 is absent, not being registered. It is explained that by a novel

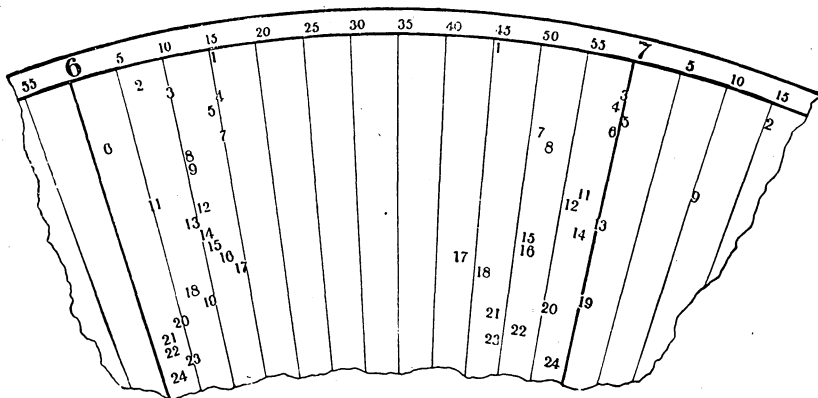


Fig. 2.—Portion of Record Dial.

record dial. In Fig. 2 is shown a portion of the record dial after a day's registrations have been made. The heavy lines are hour lines and the lighter ones five minute lines. The figures to the

arrangement the numbers come consecutively on the record dial, and that the key, Fig. 3, will enter only the hole

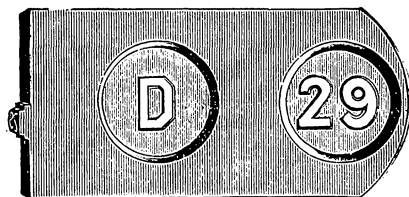


Fig. 3.—Registering Key.

right are printed in red and indicate the arrival of employees, while the figures to the left are in blue and indicate the departure of employees. The registration in two different colors is accomplished by shifting a little lever, which throws either a red or blue ribbon in commission, through which

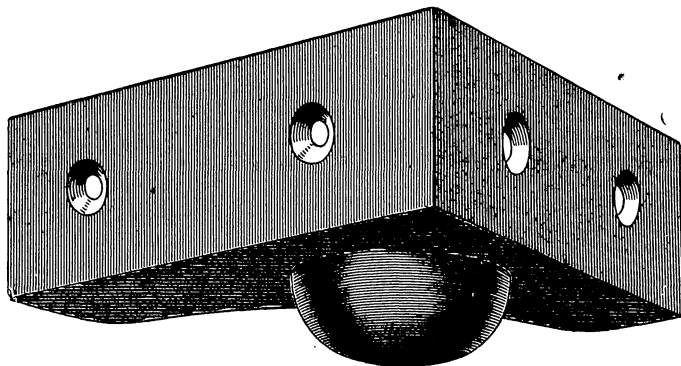
for which it is intended. A key is carried by each employee, and a slight pressure upon it will ring a bell, indi-

Among the new goods for this season shown by the Raymond & Campbell Mfg. Company, Middletown, Pa., is the Art Perfect, a full reversible flue base burner of graceful outline and appropriate ornamentation. It is so constructed that the cylinder can be removed by simply taking out two bolts, while the entire upper nickel section can readily be removed as one piece. The stove has large ash pan, Ransom duplex grate and two large hot air flues in the rear of the stove for taking the heated air to the floor above, thus making it a powerful double heater. The Perfect is also shown, being a new square stove, direct draft, embodying the latest improvements and decorated in an attractive style. The Perfect Gem is a medium priced single and double heater made in three sizes. The company have also added to their assortment the Electric oil stove, having taken the exclusive agency for the heaters, ranges and cook stoves made by the Electric Oil Stove Company.

Chest Corner No. 382.

The accompanying cut represents a chest corner offered by Ransom Hardware Company, Burlington, Vt. The corner is made of bronze metal $2\frac{1}{4}$ x $1\frac{1}{4}$ inches in size, extra heavy and full polished. It has a ball on the bottom to keep the chest from the floor and to prevent the splitting off of the bottom edges of the chest when it is drawn by one end. It is also designed to cause the chest to stand solid on an uneven floor.

The amount of dutiable merchandise entered and remaining in the bonded warehouses of New York during the month of July shows an increase of \$5,791,968 over July, 1893, and an increase of \$5,164,355 over June of this year. The warehouses have been



Chest Corner No. 382.

crowded to their fullest extent, but heavy withdrawals are now expected to relieve their congested condition.

The Climax Oil Heater.

The Climax Mfg. Company, 25 Lake street, Chicago, have brought out an oil heating stove which has decidedly novel

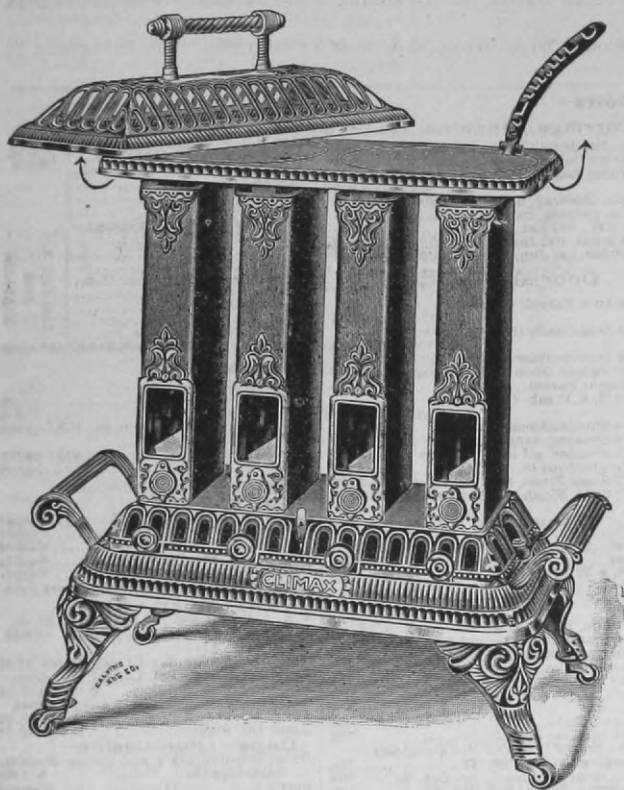


Fig. 1.—The Climax Oil Heater.

features. Illustrations are herewith given which will enable these to be fully understood. In appearance the heater resembles a radiator. This form has been adopted to secure the maximum of radiating surface. A 4-inch burner is placed in each of the four columns, all taking their supply of oil from the cast iron reservoir which forms the base. The reservoir being of cast iron, there is no leakage. The long radiating flues make perfect combustion and prevent odor. An ornamental cast iron top covers the whole of the stove. It has a swing cover, as shown in Fig. 1, which can easily be removed, disclosing two cooking holes. Fig. 2 shows the upper portion of the stove tilted over for the purpose of trimming wicks. It also shows how the top is arranged over the radiating flues. A leading feature of this stove is the fact that one, two, three or all the burners can be used according to the heat required. The radiating flues are made of Russia iron. All exposed iron parts are nickered. It is mounted on casters, so that it can be easily moved about. The capacity of the reservoir is 1 gallon, which will supply the burners for ten hours. The height of the heater is 25½ inches and the weight is 40 pounds. The manufacturers state that its heating capacity has been thoroughly tested and they offer it with confidence to those who are seeking a powerful oil heater.

The steamship "New York" of the American line, on her westward passage, ending Friday last, made the quickest run on record between Southampton and New York, accomplishing the distance in 6 days, 8 hours and 38 minutes. Her average speed was 20 miles an hour.

Major's Ice Float.

A. Major, 232 William street, New York, is offering an ice float for use in water coolers, as shown in the accom-

panying cut. The float is made of galvanized iron, the part described in the cut as the float being 3 inches high, and the ice pan above 4 inches deep. The floats are made regularly in all sizes

both. It is claimed that the use of the float will make a saving of from 25 to 33½ per cent. in the ice used, and that it is a perfect protection to the bottom of the cooler. It is explained that the

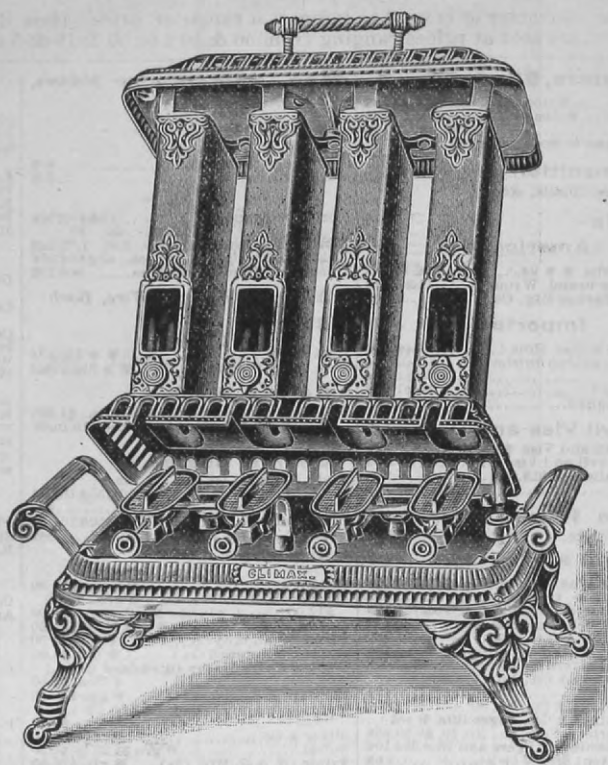
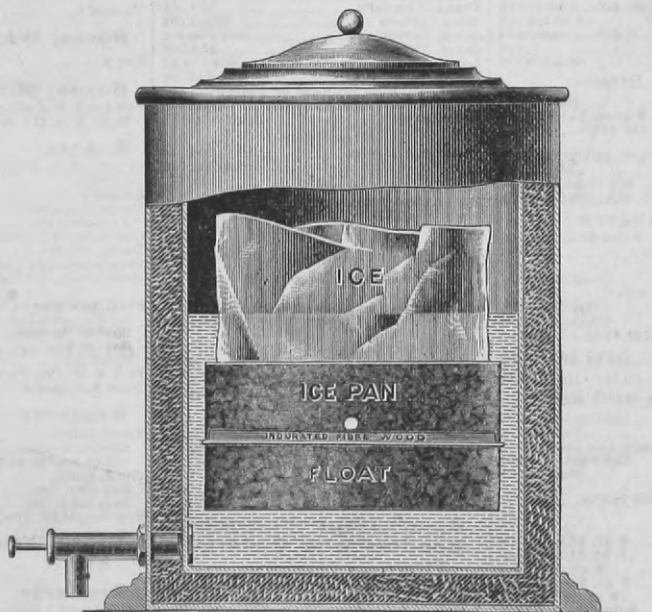


Fig. 2.—Climax Heater with Burners Exposed.



Major's Ice Float.

from 6 to 14 inches in diameter, and are used in coolers whose inside diameter is 1 inch larger than that of the float. A hole is provided at the bottom of the pan for letting the water out as the ice melts, when the pan is above the water. The maker states that water drawn from a cooler registers from 44° to 48°,

float is also adapted for use on steamboats and railway cars, where in coolers without this device the water is constantly washing over the ice and melting it rapidly, as the float serves as a plug and prevents the water washing over the ice. Floats are made to order for square and irregular shaped coolers.

AUGUST 29, 1894.

The character @ is used to indicate a range of price: thus discount 50 & 10% @ 50 & 10 & 5 %, signifies that the goods in question are sold at prices ranging from 50 & 10% to 50 & 10 & 5 %.

| Loose Joint.....

Loose Joint, Japanned.....	
Loose Joint, Jap. with Acorns..	
Loose Pin, Acorns.....	75¢10
Loose Pin, Acorns, Japanned...	②80%
Loose Pin, Acorns, Japanned, Plated Tips.....	
Mayer's Hinges.....	

Fast Joint, Broad.....
Fast Joint, Narrow.....

Fast Joint, Lt. Narrow.....	} List Jan. 1898, 50¢ 50¢ 50¢ 50¢ 50¢ 50¢
Inside Blind, Light.....	
Inside Blind, Regular.....	
Loose Joint, Broad.....	
Loose Pin.....	
Table Butts, Back Flaps, &c.....	
Bronzed Wrought Butts.....	50¢ 50¢ 50¢ 50¢ 50¢ 50¢

Cages, Bird—

Hendryx Brass:	
3000, 5000, 1100 series.....	10%
1200 series.....	40%
200, 300, 600 and 900 series..	40&10@50%

Hendryx Bronze:	
700, 800 series.....	4
Hendryx Enameled.....	4

Calipers—See *Compasses*.
Calks Toe—
 Burke's, One Prong, Blunt.....4/05

Burke's, One Prong, Sharp... ..
Burke's, Two Prong, Blunt.....
Burke's Two Prong, Sharp.....

Gautier, One Prong, Blunt..... 5.26
CanOpeners—See **Openers**, **Cans**
Cans Milk
 S. S. & Co.: 5-gal. \$3.00; 8-gal., \$4.40;
 10-gal., \$4.75 each..... 40211
Cans Oil
 Galvanized Blue Band, 1 gal. 7 doz. \$2.35
 Galvanized Blue Band, 5 gal., Tip-Top, 7 doz. \$2.35
 Galvanized Blue Band, 5 gal., Faucet, 7 doz., \$3.00
Glass Oil, Friend..... 7 doz. \$3.75
Caps—Percussion
 Hicks & Goldmark's and Union Metallic
 Cartridge Co. 7 100's..... 56058
 Eley's E. B. 7 100's..... 56058
 E. B. Waterproof, Central Fire, 10's..... 56058
 E. B. Grd. Edge Cent. Fire, 10's..... 56058
 E. B. Trimmed Edge, 10's..... 56058
 F. L. Waterproof, 10's..... 56058

G. D.
Musket, Waterproof 1-10's

S. B. Genuine Imported.....
Primers—
 Berdan Primers, \$1.00.....
 B. L. Caps (Sturtevant Shells) \$1.00.....
 All other Primers, \$1.20.....
Cards—
 Watson's Cotton, Wool, Horse and
 Ella Hat January, Feb. 1901

Carpet Stretchers.

Cartridges -
 B. B. Caps, Conf. Ball, Swgd.,...\$1.85@ \$1.9
 B. B. Caps, Round Ball, . . . \$1.60@ \$1.6
 Blank Cartridges, except 22 and 32 cal.

Blank Cartridges, 22 cal. \$1.75

Blank Cartridges, 32 cal. \$3.50.....	2
Cent. Fire, Military and Sporting 15 & 50	50
Cent. Fire, Pistol and Rifle.....	25 & 50
Primed Shells and Bullets.....	15 & 50
Rim Fire Cartridges	50 & 50
Rim Fire Military.....	15 & 50

Carpet Sweepers—
See Sweepers, Cornet.

Casters—

Bed.....	} ...60&10@60&1C&1U
Plate.....	
Shallow Socket...	
Deep Socket.....	65
Giant Truck Casters.....	34
Gwinner's Common Sense.....	45&50

Gwinner's Hercules.....
Martin's Patent (Phoenix).45&1

Payson's Anti-friction.....	70¢	70¢	10¢
Payson's Truck.....	60¢	60¢	10¢
Socket Truck Casters.....	50¢	50¢	10¢
Stationary Truck Casters.....	50¢	50¢	10¢

Tucker's Patent, low list.....
Vale Casters, low list.....

Cattle Leaders—
See Leaders, Cattle.

Cement—
Victor Elastic..... 5 1/2 bags

Chain—

American Coll, in cask lots,
 3-16 5-16 7-16 1/2 5/8 3/4
 \$7.60 5.30 4.45 3.80 3.65 3.50 3.40 3.30
 Less than cask lots, add 1/2 @ 1/2 @ 1/2 @ 1/2 @
 German Coll, list July 12, 1893
 60 25 @ 60 25 @ 60 25 @ 60 25 @
 German Halter Chain, list July 12, 1893
 60 25 @ 60 25 @ 60 25 @ 60 25 @

Trace, Wagon and Fancy Chair
List revised May, 1893.....
Barnes' Reinforced Sash

Barnes Victor Sash.....	6
Covert Halter.....	60¢
Covert Heel Chain.....	50¢
Covert Traces.....	35¢

Eureka Weldless Coll.
Eureka Weldless Trace.....
Jack Chain, Iron and Brass,
10, 1893

Onelda Halter Chain.....	60	00	00
Pump Chain, Galvanized.			
5 ton lots.....	7	100	00
1 ton lots.....	3	100	00

Small lots from jobbers...
Chalk... (at factory)

Blue, case lots. *gr 25¢; small lots. 40¢
Red, case lots. *gr 20¢; small lots. 35¢
White case lots. *gr 17¢; small lots.

See also Crayons.

Chalk Lines—See Lines.**Checks, Door—**

Barley's 20%
 Unity 50%

Chisels—**Socket Framing and Firmer**

Mix
 Ohio Tool Co. 75¢100¢80%
 P. S. & W
 Withers 30%

Charles Buck 30%
 Douglass 75¢75¢10%
 Merrill 60¢100¢60¢100%
 L. & I. J. White 30¢80¢5%

Tanged and Miscellaneous

Buck Bros 30%
 Charles Buck 30%
 Butcher 475¢55¢0 to 2

Spear & Jackson's 55 to 2
 Tanged Firmers 50¢50¢10%
 L. & I. J. White, Tanged 25¢5%

Cold Chisels, fair quality, 7 gal. 14¢10%

Chucks—

Boach Pat. each, \$3.00 20%
 Danbury each, \$3.00, 30¢80¢5%

Graham Patent 33%
 Morse's Adjustable, each, \$7.00, 20¢20%
 Syracuse, Bala Pat. 25%

Skinner Patent Chucks 40%
 Combination Lathe Chucks 40%
 Drill Chucks 40%
 Independent Lathe Chucks 40%
 Planer Chucks 20%
 Universal Lathe Chucks 40%

Union Mfg. Co. 40%
 Combination 40%
 Independent 40%
 Universal 40%
 Victor \$3.50, 25%

Churns—

McDermaid Star Barrel Churn, each
 6 gal., \$2.60; 10 gal., \$2.75; 15 gal.,
 \$3.00; 20 gal., \$3.25.

Tiffin Union, each, 5 gal. \$3.25; 7 gal.,
 \$3.75; 10 gal., \$4.25.

Clamps—

Adjustable, Cincinnati 15¢10%
 Adjustable, Hammers 16¢15%
 Adjustable, Stearns' 30¢30¢10%

Barnes' Machinists' Clamps 33%
 Cabinet, Sargent's 70¢10%
 Carpenter's, Cincinnati 25¢10%
 Carriage Makers', P. S. & W. Co. 40%
 Carriage Makers', Sargent's 75¢75%
 Eberhard Mfg. Co. 40¢50¢40%
 Joiners' Clamps, Tatum's 25¢10%
 R. I. Tool Co.'s Wrought Iron 25%
 Saw Clamps, see Vises, Saw Filers'

Stearns' Malleable, with Wrought Iron
 Screws 70¢75%
 Stearns' Steel 25%
 Warner's 40¢10¢40%100%
 Cleavers, Butchers'—

Beatty's 40¢50¢40%10%
 Bradley's 25¢30%
 Foster Bros. 30%
 New Haven Edge Tool Co.'s 30%
 Nichols Bros. 30%
 P. S. & W. 33%
 Schulte, Lohoff & Co. 40¢40%
 L. & I. J. White 25%

Clothes and Netting, Wire

See Wire, &c.

Cocks, Brass—

Hardware List (Globe, Kerosene, Lever,
 Bibbs, Racking, &c.) 60¢20¢60%10

Coffee Mills—See Mills, Coffee.**Collars, Dog—**

Brass, Pope & Stevens' List 40%
 Chapman Mfg. Company, new list 40%
 Embossed, Giff, Pope & Stevens' list 40%
 Leather, Pope & Stevens' list 40%
 Medford Fancy Goods Co. 40%100%50%

Combs, Curry—

American Curry Comb Co. 33%40%
 Fitch's 50¢100%50%10%
 Giff's Magnific 50¢20%
 Kohler's Humane 17%
 Kohler's Magic Oscillating 22%
 Rubber, per doz., \$10.00 25%

Compasses, Dividers &c.

Compasses, Callipers, Dividers, 70¢10¢75%
 Bemis & Call Co.'s 65%
 Dividers 55%
 Callipers, Calipers, Patent Inside 55%
 Callipers, Double 65%
 Callipers, Inside or Outside 65%
 Callipers, Wing 60%
 Compasses 50¢25%
 Excelsior 50%

Cord Sash—

Braided, Crown Drab and Fancy, 7
 B. 55¢ 80%
 Braided, Crown White, 7 B. 50¢ 50%
 Cable Laid Italian Sash 10¢100%
 Common 8¢40%
 Common Russia Sash 12¢100%
 Egyptian, India Hemp, Braided 20%
 India Cable Laid Sash 11¢100%
 Massachusetts, White 22¢24%
 Ossawaun Milla—

Crown, Solid Braided White, 7 B. 22¢
 Crown, Drab and Fancy, 7 B. 22¢
 Braided Giant, Drab and Fancy, 7 B. 30%
 Braided, Giant, White, 7 B. 20%
 Patent, good quality, 7 B. 10¢11%
 Patent Russia Sash 13¢14%
 Ramon—

Braided, Drab Cotton 7 B. 42¢
 Braided, Italian Hemp 7 B. 40%
 Braided, Linen 7 B. 50%
 Braided, White Cotton 7 B. 37%
 Semper Idem, Braided, White 26%
 Silver Lake—

A quality, Drab, 55¢ 25%
 A quality, White, 55¢ 25%
 B quality, Drab, 35¢ 10%
 B quality, White, 35¢ 10%
 Sylvan Spring, Extra Braided, Drab 39%
 Sylvan Spring, Extra Braided, White 34%
 Tate's Solid Braided—

Economy Drab 7 B. 27%

Cracks, Nut—

Japaned, 7 gro., \$30. 50%
 Nickel Plated, 7 gro., \$30. 50%
 Table (H. & B. Mfg. Co.) 40%
 Turner & Seymour Mfg. Co. 50%

Crackles, Nut—

Acme 50%
 White Crayons, 7 gross, 60¢6%

Cases, 100 gr., \$3.75 to \$4.25, at factory.
 D. M. Steward Mfg. Co. 25%
 Metal Workers', 7 gross, \$2.50, 20¢25%
 Railroad, 7 gross, 2.00, 20¢25%
 Rolling Mill, 7 gross, 2.50, 20¢25%
 Soapstone Pencils, 7 gross, 1.50, 20¢25%
 See also Chalk.

Craddles—

Grain 50¢25¢50¢55%
 Crayons—

White Crayons, 7 gross, 60¢6%

Cases, 100 gr., \$3.75 to \$4.25, at factory.
 D. M. Steward Mfg. Co. 25%
 Metal Workers', 7 gross, \$2.50, 20¢25%
 Railroad, 7 gross, 2.00, 20¢25%
 Rolling Mill, 7 gross, 2.50, 20¢25%
 Soapstone Pencils, 7 gross, 1.50, 20¢25%
 See also Chalk.

Crays—

White Crayons, 7 gross, 60¢6%

Cases, 100 gr., \$3.75 to \$4.25, at factory.
 D. M. Steward Mfg. Co. 25%
 Metal Workers', 7 gross, \$2.50, 20¢25%
 Railroad, 7 gross, 2.00, 20¢25%
 Rolling Mill, 7 gross, 2.50, 20¢25%
 Soapstone Pencils, 7 gross, 1.50, 20¢25%
 See also Chalk.

Creamery Pails—See Pails, Creamery.**Crow Bars—See Bars, Crow.****Curry Combs—**

See Combs, Curry.

Cutters—

American 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Enterprise 25%
 Nos. 10 12 22 32 42
 Each \$3.25 \$4.00 \$4.80 \$5.60 \$6.40
 Dixon's, 7 doz. 40¢40%
 Nos. 14.00 17.00 19.00 30.00

Draw Cut, each:
 Nos. 5 2 6 8
 \$50 \$75 \$80 \$225 20¢25%

Hale's, 7 doz. 11 12 13
 Nos. \$27.00 \$33.00 \$45.00

Home No. 1, 7 doz. \$27.00 \$33.00 \$45.00

Little Giant, 7 doz. 40¢100%50%
 Nos. 305 310 312 320 322
 \$35.00 \$48.00 \$44.00 \$72.00 \$68.00

Miles' Challenge, 7 doz. 45¢45%10%
 Nos. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Triumph No. 505, 7 doz. \$21.00, 25¢30%
 Woodruff's, 7 doz. 40¢40%5%

Chadborn's Smoked Beef Cutter, 7 doz.,
 \$86.00 100 150

Enterprise Beef Shavers 20%
 Slaw and Kraut—

Tucker & Dorsey Mfg. Co. 40%
 Kraut Cutters 40%
 Slaw Cutters, 1 Knife, 7 gross, \$21.00
 Slaw Cutters, 2 Knife, 7 gross, 30.00

Tobacco

Acme 7 doz., \$20.00, 40%
 All Iron 7 doz., \$20.00, 40%
 Charleston 20¢100%30%
 Nashua Look Co.'s, 7 doz., \$18.00, 50¢55%
 National 7 doz., \$21.00, 30%
 Sargent's 7 doz., \$24.00, 60¢80%10%

Washer

Appleton's 7 doz., \$16.00, 60¢100%60%10%
 Bonney's 7 doz., \$16.00, 60¢100%60%10%
 Cincinnati 25¢10%
 Johnson's 7 doz., \$11.00, 33%
 Penny's, 7 doz., \$14.14; Jap'd, 18, 55%
 Smith's Pat. 7 doz., \$12.00, 20¢100%10%

Diggers, Post Hole, &c.—

Cronk's Post Bars, 7 doz. \$60.00,
 \$10.50 to \$50.10%
 Eureka Diggers, 7 doz., \$10.50 to \$50.10%
 Fletcher Post Hole Augers, 7 doz. \$36.00,
 \$20 to \$20%10%
 Gem, Improved, 7 doz., \$9.00 to \$10.00, net
 Gibbs' Columbia 7 doz. \$12.00
 Gibbs' Hustler 7 doz. \$10.00
 Gibbs' Imperial 7 doz. \$7.50
 Gibbs' National 7 doz. \$12.00
 Gibbs' Post Hole Digger 7 doz. \$12.75
 Kohler's Hercules 7 doz. \$14.00
 Kohler's Invincible 7 doz. \$12.00
 Kohler's Little Giant 7 doz. \$18.00
 Kohler's New Champion 7 doz. \$8.00
 Ryan's 7 doz., \$20.00, 10%
 Samson, 7 doz., \$34.00 25¢25%
 Schelder 7 doz., \$13.00
 Shimer's Hollow Handle, 7 doz., \$24.00,
 50%

Vaughan's Post Hole Auger, 7 doz.,
 \$8.50 to \$9.50

Dividers—See Compasses.**Dog Collars—See Collars, Dog.****Door Checks—**

See Checks, Door.

Door Springs—

See Springs, Door.

Drawers, Money—

Money Drawers, 7 doz. \$18 to \$20
 Waddell's Improved, No. 1, 7 doz. \$15.00,
 Waddell's Improved No. 2, 7 doz. \$18.00
 Waddell's Comb. Cutlery Case and
 Alarm Tilt \$12.50

Drawing Knives—

See Knives, Drawing.

Drills and Drill Stocks—

Automatic Boring Tools \$1.75 to \$1.85
 Bench Drills, Stearns' 50%
 Blacksmiths' each \$1.75
 Blacksmiths' Self-Feeding, each \$7.50, 20%
 Breast, Bartholomew's each \$2.50, 25%
 Breast, Millers Falls each \$5.00, 25%
 Breast, P. S. & W. 40¢10%
 Breast, Wilson's 30¢5%
 Chicopee Automatic Drill 20¢10%
 Goodell Automatic Drills, 40¢50¢40%10%
 Hatchet, Curtis & Curtis 30%
 Hatchet, Ingemoll's 25%
 Hatchet, Merrill's 30¢20%
 Hatchet, Moore's Triple Action 25¢30%
 Hatchet, Parker's 20¢20%
 Hatchet, Weston's 20¢25%
 Hatchet, Whitney's 20¢10%
 Whitney's Hand Drill, Plain, \$11.00,
 Adjustable, \$12.00 20¢10%

Twist Drills—

Cleveland 50¢100%10%
 Diamond, W. & B. 50¢100%10%
 Graham's Pat. Groove Shank, 50¢100%10%
 Morse 50¢100%10%
 New Process 50¢100%10%
 Standard 50¢100%10%
 Syracuse (Metal List) 50¢10%

Drill Bits or Bit Stock

Drills—See Augers and Bits.

Drill Chucks—See Chucks.**Dripping Pans—**

See Pans, Dripping.

Drivers, Screw—

Allard's Spiral 60%
 Brace Screw Drivers 25¢10%
 Buck Bros. 30%
 Buck Bros' Screw Driver Bits 27%25%
 Clark's Pat. 35%40%
 Cincinnati 25¢10%
 Champion 25¢10%
 Diston's 50%
 Douglass Mfg. Co. 20¢20%10%
 Electric Spiral 50%
 Ellrich's Socket and Ratchet 40%10%
 Clark's Hot Die Sets, No. 3, \$12.00, 45%
 Gay & Parsons 35%40%
 Goodell's Automatic 50¢40%5%
 Howard-Allard 50%
 Jones Reversible 40%
 Knapp & Cowles 70%10%
 Nos. 2 70%10%
 Nos. 3 60%10%
 Nos. 4 and 00, Acme and Ideal, 60%10%
 Kolb's Common Sense, 7 doz., \$6.00,
 25¢10%

Mayhew's Black Handle 50%
 Mayhew's Monarch 45¢10%
 P. S. & W. 70%
 Sargent & Co's

No. 1, Forged Blade 60¢100%10%
 Nos. 20, 40 and 60 60¢100%10%
 Screw Driver Bits, Parr's, 7 gross, \$6.25
 Screw Driver Bits 7 doz., 50¢75%
 Stanley E. & Co.'s

No. 64, Varinshed Handles 65¢10%
 No. 86 70%10%
 Stearns' 25¢10%5%
 Syracuse Screw-Drive Bits 30¢30%5%
 C. T. Williamson Wire Noyalty Co. 50%

Egg Beaters—See Beaters, Egg.**Egg Poachers—**

See Poachers, Egg.

Electric Bell Sets—

See Bells, Electric.

Emery—No. 4 to No. 54 to Flour, OF

Kegs, 7 doz. 48 gr. 150 gr. F.F.F.
 1/2 kegs, 7 doz. 48 gr. 5 gr. 3 gr.
 1/4 kegs, 7 doz. 48 gr. 5 gr. 3 gr.
 10 lb cans, 10 6 6 5 5
 10 lb cans, 10 6 6 5 5
 than 10 10 6 6 5 5

Enamelled and Tinned

Ware—See Ware, Hollow

Escutcheon Pins—

See Pins, Escutcheon.

Escutcheons—

Brass Thread 60¢60%10%
 Door Lock Same dis. as Door Locks.
 Wood 25%

Expanded Metal—

List No. 5.

Door Mats, Galvanized 25%
 Fencing, Painted Sheets 20%
 Galvanized 10%
 Netting, Painted Sheet 20%
 Tree Guards, Painted 15%
 Window Guards, Painted 15%

Extractors, Lemon Juice

See Squeezers, Lemon.

Fasteners, Blind—

Austin & Eddy, 7 gr. sets \$5.50
 Mackrell's, 7 gr. sets \$1.00, 20¢20%10%
 Security Gravity 7 gr. \$7.50
 Van Sandt's Screw Pat, \$15 gr. 50¢10%
 Zimmerman's 50¢10%

Faucets—

B. & L. B. Co.
 West's Lock, Open and Shut Key 50%
 Burnside's Red Cedar 50%
 Burnside's Red Cedar, bbl lots 50¢10%
 Cork Lined 70¢70%
 Fern's 40%
 Fern's Cork Stops 33%
 Frary's Pat. Petroleum 60%
 Metallic Key, Leather Lined 60¢10%
 National Measuring, 7 doz., \$36.00, 25¢10%
 John 40%
 IXL, 1st quality, Cork Lined 50%
 Diamond Lock 40%
 Perfection, Fla. Red Cedar (in boxes) 40%
 Boss Metallic Key 60%
 Reliable Cork Lined 80%
 O. L. Western Pattern Cork Lined, 50%
 Brand, Red Cedar (in bbls.), 60¢10%
 Western Pattern Metal Key 40%
 No Brand Metal Key 60%

Felice Plates—

See Plates, Felice.

Fibre Ware—See Ware, Fibre.**Fifth Wheels—**

Brewster 50¢5%
 Derby and Cincinnati 45¢5%

Files—

Domestic—

American 70¢70%10%
 Arcade 60¢100%10%
 G. & H. Barnett (Black Diamond) 60¢100%10%
 Eagle 80¢100%10%
 Nicholson Files, Rasps, &c. 60¢100%10%
 Nicholson (X.F.) Files 25%
 Nicholson's Royal Files (Seconds) 75%
 (extra prices on certain sizes.)
 Other makers, best brands 70¢50%10%
 Fair brands 70¢75%5%
 Second quality 80¢80%10%
 Arcade Horse Rasps 50¢100%5%
 Chelsea Horse Rasps, Hand Cut 50¢10%
 Heller's Horse Rasps 80¢10%
 McCaffrey's Horse Rasps 50¢100%10%5%
 Trojan Horse Rasps 60¢100%5%

Imported—

Butcher Butcher's list, 80%
 Strubbe's list 75¢95%

Fixtures Grindstone

Moore's 55¢10%
 P. S. & W. Co. 50¢100%10%
 Reading Hardware Co. 30¢100%80%100%
 Sargent's Patent 70¢100%70%100%10%

Fluting Machines—

See Machines, Fluting.

Fodder Squeezers—

See Squeezers, Fodder.

Forks—

Hay, Manure, &c. Asso. List, 70¢70%55%
 Hay, Manure, &c. Phila. List, 60¢60%100%
 Plated, see Spoons.

Frames

Halters—

Cover's Adj. Rope Halters.....	40c
Cover's Adj. Web Halters.....	85c
Cover's Hemp Horse and Cattle Tie.....	50c
Cover's Jute Cattle Ties.....	70c
Cover's Jute Horse Ties.....	70c
Cover's Rope, 1/2 in. Jute.....	50c
Cover's Rope, 3/4 in. Hemp.....	60c
Cover's Saddle Works Halters.....	38c
Cover's Saddle Works Handy Web Halters.....	38c
Cover's Saddle Works Horse and Cattle Ties.....	38c

Hammers—**Handled Hammers—**

Atha Tool Co.....	50c
Buffalo Hammer Co.....	50c
Humason & Beckley.....	50c
Verree.....	40c
Cheney's Machine & Riveting.....	50c
O. Hammond & Son.....	40c
Magnetic Tack, Nos. 1, 2, 3.....	1.50
1.75.....	80c
Maydole's, list Dec. 1.....	25c
Peck, Stow & Wilcox.....	40c
Payette R. Plumb.....	40c
Artisan's Choice, A. E. Nail.....	40c
Engineers' and B. S. Hand.....	60c
Machinists' Hammers.....	60c
Regular Y. & P. A. E. Nail.....	40c
Other Hammers.....	40c
Warner & Nobles, new list.....	25c

Heavy Hammers and Sledges—

8 lb. and under.....	80c
8 to 5 lb.....	80c
Over 5 lb.....	80c
Wilkinson's Smiths.....	10c

Handcuffs and Leg Irons—**See Police Goods.****Handles—**

Cross-Cut Saw Handles—	40c
Atkins.....	15c
Champion.....	15c
Ely's Perfection.....	30c
Sensible per doz. Pr.....	5.00

Iron, Wrought or Cast—

Barn Door, per doz.....	20c
Champion Iron Drop Latches.....	40c
Chest, Sargent's list.....	50c
Door or Thump.....	1.00

Wood—

Auger, assorted.....	gr 5.00
Auger, large.....	gr 7.00
File, assorted.....	gr 2.75
Brad A.W.I.....	gr 2.00
Apple Firmer Chisel, large.....	gr 6.00
Hickory Firmer Chisel, large.....	gr 4.50
Hickory Firmer Chisel, large.....	gr 6.00
Socket Firmer Chisel, ass'd.....	gr 3.00
Chisel, Fibre Head.....	33c
Hammer, Hatchet, Axe, &c.....	60c
Hoe, Rake, Shovel, &c.....	60c
Pat. Auger, Douglass.....	set 1.25
Pat. Auger, Ives.....	30c
Pat. Auger, Swan's.....	set 1.00
Saw and Plane.....	40c
J. B. Smith & Co's Pat. File.....	50c

Hangers—

Barn Door, New England.....	70c
Barn Door, old patterns.....	70c
Barry.....	50c
Best Anti-Friction.....	60c
Boss.....	60c
Carrier Steel Anti-Friction.....	50c
Champion.....	60c
Chicago Anti-Friction.....	30c
Chicago Anti-Friction.....	55c
Cincinnati Nos. 1, 2, 25; 3, 25; 4, 25.....	2.50
Crescent.....	60c
Cronk's Patent, Steel Covered.....	40c
Duplex (Wood Track).....	60c
Economy.....	60c
Hamilton Wrought Steel Track.....	55c
Interstate.....	60c
Kidder's.....	50c
Lane's New Standard.....	50c
Lane's Parlor.....	40c
Lane's Standard.....	50c
Lundy, Steel Parlor.....	40c
Matchless.....	45c
Moody.....	45c
Moore's Baggage Car Door.....	33c
Moore's Elevator.....	33c
Moore's Railroad.....	55c
Nickel, Steel, Nos. 0, 25; 1, 20; 2, 15.....	40c
Orleans Steel.....	40c
Paragon Nos. 5, 6, 7 and 8.....	20c
Pendulum, Payson's.....	40c
Perfection.....	50c
Richards.....	30c
Samson Steel Anti-Friction.....	55c
Star.....	40c
Stearns' Anti-Friction.....	20c
Stearns' Challenge.....	25c
Sterling.....	50c
Terry's Ideal.....	50c
Terry's Modern.....	50c
Terry's Shield.....	60c
Terry's Solid.....	50c
Terry's Wrought Single Strap.....	50c
Victor, No. 1, 15.00; No. 2, 16.50.....	3.18
3, 18.00.....	50c
Warner's Pat.....	20c
Wild West.....	45c
Zenith for Wood Track.....	55c

Harnes Snaps—See Snaps.**Hatchets—**

American Axe and Tool Co.....	40c
Blood's.....	40c
Hunt's.....	40c
Hurd's.....	40c
Mann's.....	40c
O. Hammond & Son.....	40c
Payette R. Plumb.....	40c
Collins.....	10c
Buffalo Hammer Co.....	40c
Kelly's.....	50c
F. S. & W. Co.....	50c
Sargent & Co.....	50c
White, Lohr & Co.....	50c
Ten Eyck Edge Tool Co.....	50c

Hay and Straw Knives**See Knives.****Hinges—****Blind Hinges—**

Clark's Nos. 1, 3, 5, 1888, Old Pattern.....	75c
Nos. 1 and 3, Tip Pattern.....	75c
No. 50 Buffalo Noiseless.....	40c
and 85 Buffalo Reversible, Nos. 3, 2, 1, 1, 1.....	75c
No. 1, Cottage, for wood only.....	80c
No. 1, Diamond, for wood only.....	80c
Die L. & P. Nos. 3, 2, 1, 1, 1.....	75c
No. 25, Empire Reversible.....	75c
Lull & Porter, Nos. 3, 2, 1, 1, 1, 0, 0, 0, 4 and 5.....	75c
Mortise Gravity, Nos. 2, 4, 4, 6, 8, 9, 10 and 10.....	50c
Huffer.....	50c
Parker.....	75c
North's Automatic Blind Hinges, No. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50.....	75c
Reading's Gravity.....	75c
Sargent's Nos. 1, 3, 5, 11, 12, 13.....	75c
Shepard's: Acone, Lull & Porter, Nos. 3, 2, 1, 1, 1, 0, 0, 4 and 5.....	75c
Buffalo Gravity Locking, Nos. 1, 3, 5 and 5.....	80c
Champion Gravity Locking, No. 7.....	80c
Clark's or Shepard's 1888, Old Pattern, Nos. 1, 3 and 5.....	75c
Clark's or Shepard's Tip Pattern, Nos. 1, 3 and 5.....	75c
Double Locking, Nos. 20 and 25.....	70c
Empire, Nos. 101 and 103.....	75c
Niagara Gravity Locking, Nos. 1, 3 and 5.....	80c
Noiseless, Nos. 50, 60, 65 and 55.....	70c
O. S. Lull & Porter, Nos. 3, 2, 1, 1, 1, 0, 0, 4 and 5.....	75c
Plum, Nos. 00, 45 and 50.....	75c
Steamboat Gravity Locking No. 10.....	80c

Gate Hinges—

Automatic.....	per doz \$12.50, 50c
Clark's, Nos. 1, 2, 3.....	60c
N. E.....	per doz \$7.80, 60c
N. E. Reversible.....	per doz \$5.60, 60c
Bommer's Japanese.....	per doz \$4.90, 60c
Shepard's Nos. 1, 2, 3.....	60c
Western.....	per doz \$4.20, 60c

Spring Hinges—

Acone.....	30c
American.....	20c
Bardeley's Patent Checking.....	15c
Barker's Double Acting.....	25c
Bommer's Japanese.....	35c
Bommer's All other Kinds.....	30c
Buckman's.....	15c
Champion.....	60c
Chicago.....	30c
Columbia.....	per gross, \$10.00
Devore, No. 1.....	per gross, \$11.00
Freepoint.....	per gross, \$12.00
Geer's Spring and Blank Butts.....	40c
Gem.....	20c
Ideal No. 3.....	per gross \$8.85
J. G. C. Covered.....	per gross, \$10.85
Knox.....	per gross, \$12.50
New Idea No. 2.....	per gross, \$11.00
No. 10 Matchless.....	45c
No. 10 Matchless.....	60c
No. 25 Unbreakable.....	60c
Oxford.....	20c
Reliable.....	per gross, \$11.00
Royal.....	per gross, \$11.00
Samson.....	per gross, \$11.00
Stearns' Noiseless Floor Hinge.....	per gross, \$11.00
Surprise.....	per gross, \$12.00
Union Mfg. Co.....	per gross, \$12.50
Union Spring Hinge Co., list March, 1888.....	20c
Wiles, No. 1, per gross, \$18; No. 2.....	\$13

Wrought Iron Hinges—

Corrug'd Strap and T.....	60c
Strap and T. List May 22, 1894.....	60c
Plate Hinges, 8, 10 and 12 in., "Providence" 1 over 12 in.....	50c
Roller Blind Hinges, Nos. 32 and 34.....	50c
Roller Blind Hinges, Nos. 232 and 234.....	50c
Roller Plate.....	70c
Roller Raised.....	70c

Screw Hook and Eye—

6 to 12 in.....	10c
14 to 20 in.....	10c
22 to 36 in.....	10c

Hoes—

Scovill and Oval Pattern.....	50c
D. H. Scovill.....	20c
Grub.....	60c
Lane's Crescent, Planters' Pattern.....	45c
Lane's Razor Blade, Scovill Pat.....	45c

Handled—

Garden, Mortar, &c.....	70c
Magie.....	per doz \$4.00
Planter's Cotton, &c.....	70c
Warren Hoe.....	60c

Hog Rings and Ringers—

See Rings and Ringers.....	
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Holding Apparatus—

See Machines, Holding.....	
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Hollow-Ware—

See Ware, Hollow.....	
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Holders—

Sensible Bag and Twine.....	50c
Sprengle's Pat.....	per doz \$15.00

Bit—

Angular.....	per doz \$24.00, 40c
Diamond.....	per doz \$24.00, 40c
Extension.....	40c
Barber's.....	per doz \$15.00, 40c
Ives.....	per doz \$20.00, 60c

File and Tool—

Bals Pat.....	per doz \$4.00, 25c
Nicholson File Holders.....	20c
Sash.....	
Motley's Adj. Sash, Medium Size.....	per doz \$1.20, 40c

Hooks—

Cast Iron Bird Cage, Reading.....	60c
Rid Cage, Sargent's.....	60c
Clothes Line, Sargent's List.....	50c

Celling, Sargent's list.....**Clothes Line, Moore's.....****Clothes Line, Reading list.....****Coat and Hat, Moore's.....****Coat and Hat, Reading.....****Coat and Hat, Sargent's list.....****Hammock, E. C. Stearns & Co.....****Harness, Reading list.....****Wire—****Atlas, Coat and Hat.....****Belt.....****Handy Hat and Coat.....****Indestructible Coat and Hat.....****Steady Ceiling Hooks.....****Williamson's Bird Cage Hooks, List April, 1892.....****Wire Coat and Hat, Gem, list April, 1890.....****Wire Coat and Hat, Miles, list April, 1890.....****Wire Coat and Hat, Standard, 60c.....****Bright Wire Goods—See Wire.****Wrought Iron—****Cotton.....****Cotton Pat. (N. Y. Mallet and Handle) Wks.....****Tassel and Picture, T. & S. Mfg. Co.....****Wrought Staples, Hooks, &c.....****See Wrought Goods****Miscellaneous—****Fish Hooks, American.....****Grass, No. 2, \$2.00; No. 3, \$2.25.....****Hooks and Eyes—Brass.....****Hooks and Eyes—Malleable Iron.....****Noll's Grass.....****Whitree—Patent.....****Bench Hooks—See Bench Stops.****Horse Nails—See Nails, Horse.****Horse Shoes—****See Shoes, Horse.****Hose, Rubber—****Competition, Fair quality.....****Competition, Low Grade.....****Extra.....****Standard.....****N. Y. B. & P. Co., Carbon.....****N. Y. B. & P. Co., Double Diamond.....****N. Y. B. & P. Co., 1816 Para.....****Cotton Garden, 34 in., coupled.....****Fair Quality.....****Good Quality, 7 ft.....****Huskers—****Blair's Adjustable.....****Blair's Adjustable Clipper.....****Bombardier's Solid Steel.....****"Boss" Styles A and B, \$2.40; E, \$2.10 per doz., net.****Indurated Fiber Ware—****See Ware, Indurated Fiber.****Irons.****Curling—****Nicol's Patent Curling Iron Heater.....****per doz.....****Silver Curling Iron, Grace Darling Curling Iron.....****No. 65.....****No. 66.....****No. 67, Mustache.....****Sad—****From 4 to 10, at factory.....****B. B. Sad Irons, per doz (at factory).....****Chinese Laundry (N. E. Butt Co.).....****Chinese Sad.....****Crown Improved.....****Ideal Irons, No. 250, per set.....****255.....****Mahony's Troy Pol. Irons.....****Mrs. Potte's Sad Irons, per set.....****Small lots.....****National Self-Heating.....****New England.....****Pottstown, per set, No. 45, 65; No. 40, 70c.....****Salamander Irons.....****Self-Heating.....****Self-Heating Tailors.....****Sensible Sad Irons, per set.....****Nos. 2.....****.60.....****.60.....****.65.....****Sensible Tailors' Irons.....****Soldering—****Soldering Coppers.....****Cover's Adjustable, list Jan. 1, 1894.....****Tinker's Dread.....****Pinking—****Pinking Irons.....****Jack Screws—See Screws.****Jacks, Wagon—****Daley.....****Lockport.....****Victor.....**

Plate.....45¢
 Bomer's Night Latches.....15¢
 R. & E. Mfg. Co., list Mar. 30, 1889.....60¢
 Sargent & Co., list July, 1894.....70¢
 Warner's Burglar Proof.....50¢

Elevator—

Moore's.....38¢
 Wrought Iron Padlocks:
 Brittan, Graham & Mathes, list
 Jan., 1894.....73¢
 Mallory, Wheeler Co., list Jan. 1,
 1894.....75¢
 Norwich Lock Mfg. Co., list June
 10, 1891.....60¢
 Russell & Erwin Mfg. Co., list June
 10, 1891.....60¢
 Sargent & Co., list January 1, 1894.....75¢
 William Wilcox Mfg. Co., list Janu-
 ary 1, 1894.....75¢
 Ames Sword Co. up to No. 108 inclu.
 Ames Sword Co. above No. 108.....60¢
 Barnes Mfg. Co.....40¢
 Champion Padlock.....40¢
 A. E. Deitz.....40¢
 Eagle.....40¢
 Eureka, Eagle Lock Co.....40¢
 E. T. Fraim's Keystone Scandinavian,
 1010 line.....90¢
 120 line.....90¢
 109 line.....65¢
 510 line.....70¢
 225, 610 and 200 lines.....70¢
 All other numbers.....60¢
 Horseshoe.....50¢
 Hotchkiss.....50¢
 No. 100.....50¢
 Bomer's No. 0 to 91.....50¢
 Bomer's Scandinavian, &c., No. 100 to
 505.....50¢
 Scandinavian.....90¢
 Slaymaker, Barry & Co.....90¢
 No. 1010 line.....90¢
 No. 41 line.....60¢
 No. 61 line.....60¢
 No. 21 line.....70¢
 No. 109 line.....90¢
 Star.....60¢
 Yale Lock Mfg. Co.'s.....net prices

Padlocks—

Attwell Mfg. Co.....25¢
 Champion Safety list January 1893.....70¢
 Clark's No. 1, 110; No. 2, 33 gr.....33¢
 Common Sense, Jap'd, Cop'd and
 Br'd.....gr \$4.00
 Common Sense, Nickel Plated.....gr \$10.00
 Corbin's Daisy, list Feb. 15, 1888.....70¢
 Davis Bronze, Barnes Mfg. Co.....70¢
 Ferguson's.....38¢
 Fish (Liesche's pat.), No. 100, gr.....60¢
 No. 105, gr.....60¢
 Giant, list Jan. 1892.....70¢
 Hammond's Window Springs.....40¢
 Hugin's New Sash Locks.....25¢
 Hugin's Sash Balances.....25¢
 Ives' Patent.....60¢
 Kempshall's Gravity.....60¢
 Kempshall's Model.....60¢
 Payson's Perfect.....60¢
 Reading.....60¢
 Security.....70¢
 Universal.....30¢
 Victor.....60¢
 Walker's.....10¢
 Wolcott's.....60¢

Sash, &c.—

Attwell Mfg. Co.....25¢
 Champion Safety list January 1893.....70¢
 Clark's No. 1, 110; No. 2, 33 gr.....33¢
 Common Sense, Jap'd, Cop'd and
 Br'd.....gr \$4.00
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 Kempshall's Model.....60¢
 Payson's Perfect.....60¢
 Reading.....60¢
 Security.....70¢
 Universal.....30¢
 Victor.....60¢
 Walker's.....10¢
 Wolcott's.....60¢

Lumber Tools—

See Tools, Lumber.

Lustro—

Four-ounce bottles.....dos, \$1.75; gr
 gross.....\$17.00

Machines.

Boring—

Without
 Augers. Upright. Angular.
 Boss, Carpenters' 3.80
 Boss, Ship Bldrs' 3.85
 Douglas.....\$5.50 \$6.75.....50¢
 Jennings'.....5.50 6.75.....50¢
 Millers Falls.....7.50.....55¢
 Phillips' Patent
 with Auger.....7.00 7.50.....50¢
 Small's, Rice's Pat 5.50 6.75.....40¢
 Fluting—
 American, 5 in., \$3.00; 6 in., \$3.40; 7 in.,
 \$4.50 each.....35¢
 Combined Fluter and Sad Iron.....
 Crown 4½ in., \$3.50; 6 in., \$4.00; 8 in.,
 \$5.50 each.....35¢
 Crown Hand Fluter, No. 1, \$15.00; 2,
 \$12.50; 3, \$10.00; 4, \$8.25.....35¢
 Crown Jewel, 6 in.....\$3.50 each, 35¢
 Domestic Fluter.....each, \$1.50
 Eagle, 8½-inch Rolls, \$2.15.....35¢
 Eagle, 6½-inch Rolls, \$2.85.....35¢
 Knax, 4½-inch Rolls.....\$3.25 each, 35¢
 Knax, 6-inch Rolls.....\$3.60 each, 35¢

Holting—

Moore's Anti-Friction Differential Pul-
 ley Block.....20¢
 Moore's Hand Holst, with Lock Brake.....20¢
 Moore's Rope Differential Pulley
 Block.....20¢
 Harris & Beekley (Teal Patent).....30¢
 See also Blocks.

Washing—

Fair and Square.....dos \$42.00
 Anthony Wayne, No. 1, \$42; No. 2,
 \$36; No. 3, \$42.....dos \$38.00
 Wayne American.....dos \$42.00
 Wells.....dos \$42.00
 Western Star, No. 2, \$36; No. 3,
 \$38.....dos \$42.00

Mallets—

B. & L. Block Co., Hickory & L. V.
 80&10&10¢
 Fibre Head, Stearns.....33¢
 Hickory.....20¢
 Magnavite.....20¢

Mattocks—Regular list.

60&10&60&10&5¢
 Measures—
 standard Fireware, No. 1 peck gr
 dozen, \$3.50; ¼-peck, \$3.00

Meat Cutters—

Cutters, Meat

Menders—

Harness.....gr doz, \$1.75
 Hudson's Hose Menders, in set, gr doz,
 \$6.00
 Hudson's Hose Bands.....gr, \$1.25

Milk Cans—See Cans, Milk.

Mills—

Box and Side, list Jan. 1, 1888, 60¢ each
 Net prices are often made which are
 lower than above discount.
 American, Enterprise Mfg. Co., list Jan.
 17, 1893.....20¢
 National List, Jan. 1, 1894.....30¢
 Swift, Lane Bros.....30¢
 Waddell's New Box Mills, Ideal
 Brand, New List.....60¢
 Mining Knives—
 See Knives, Mining.
 Molasses Cates—
 See Cates, Molasses.
 Money Drawers—
 See Drawers, Money.

Mowers, Lawn—

Highest 10 in. 12 in. 14 in.
 grade, \$4.00 \$5.25 \$4.50 \$6.00 \$6.00 \$6.75
 Good.....\$3.00 \$3.25 \$3.50
 Cheap.....2.25 2.50 2.75

Muzzles—

Safety.....dos, \$3.00, 25¢
 Nails—
 Cut and Wire. See Trade Report.
 Wire Nails, Papered.
 Association list, May 1, '92.....85¢
 Hungarian, Finishing, Upholsterers', &c.
 See Tools.

Horse—

Nos. 6 7 8 9 10
 A. C.....25¢ 23¢ 22¢ 21¢ 21¢
 American.....9¢ 9¢ 9¢ 9¢ 9¢
 Anchor.....23¢ 21¢ 20¢ 19¢ 18¢
 Ausable.....23¢ 21¢ 20¢ 19¢ 18¢
 Capewell.....19¢ 18¢ 17¢ 16¢ 15¢
 C. B. K.....23¢ 21¢ 20¢ 19¢ 18¢
 Champion.....25¢ 23¢ 22¢ 21¢ 20¢
 Champlain.....23¢ 21¢ 20¢ 19¢ 18¢
 Clinton, Fin.....19¢ 17¢ 16¢ 15¢ 14¢
 Empire Bronzed.....11¢
 Essex.....23¢ 21¢ 20¢ 19¢ 18¢
 Lyra.....9¢ 9¢ 9¢ 9¢ 9¢
 Maud S.....23¢ 21¢ 20¢ 19¢ 18¢
 Northwest'n.....25¢ 23¢ 22¢ 21¢ 20¢
 Putnam.....23¢ 21¢ 20¢ 19¢ 18¢
 Snowden.....9¢ 9¢ 9¢ 9¢ 9¢
 Standard.....23¢ 21¢ 20¢ 19¢ 18¢
 Vulcan.....23¢ 21¢ 20¢ 19¢ 18¢
 Western.....23¢ 21¢ 20¢ 19¢ 18¢

Picture—

Brass Head, Combination list.....60¢
 Brass Head, Sargent's list.....60¢
 Porcelain Head, Combination list.....40¢
 Porcelain Head, Sargent's list.....40¢
 Niles' Patent.....40¢

Nail Pullers—See Pullers, Nail.

Nail Sets—See Sets, Nail.

Nippers, See Pliers and Nippers

Nut Crackers—

See Crackers, Nut.
 Nuts—List Dec. 18, 1889.
 Cold Punched.....Square, Hex.
 Hot Pressed.....5.80 6.50 off list
 In packages of 100 lb, add 1-10¢ lb
 net; in packages less than 100 lb, add
 ¼¢ lb, net.

Oakum—

Best or Government.....gr 6¼¢
 Navy.....gr 4¼¢
 U. S. Navy.....gr 5¼¢

Oil Tanks—See Tanks, Oil.

Oilers—

Brass and Copper.....50¢
 Zinc and Tin.....70¢
 Broughton's Brass.....50¢
 Broughton's Zinc.....50¢
 Malleable, Hammers' Improved, No. 1,
 \$3.80; No. 2, \$4.00; No. 3, \$4.40 dos.
 Malleable, Hammers' Old Pattern, same
 list.....50¢
 Olmstead's Brass and Copper.....50¢
 Olmstead's Tin and Zinc.....50¢
 Prior's Pat. or "Paragon" Brass.....50¢
 Prior's Pat. or "Paragon" Zinc.....70¢
 Steel, Draper & Williams.....50¢
 Wilmot & Hobbs Mfg. Co., Steel Anti-
 Rust.....60¢

Openers, Can—

American.....gr gross \$1.75 \$2.00
 Champion.....gr \$2.00
 Domestic.....gr \$2.00
 Duplex.....gr \$2.50 15¢
 Eureka.....gr \$2.50 15¢
 Excelsior, No. 1 \$2.50; No. 2, \$1.50.....40¢
 French, No. 4.....gr \$2.25 55¢
 Iron Handle, No. 5.....gr \$6.00 45¢
 Lyman's.....gr \$3.75 20¢
 Messenger's Comet.....gr \$3.00 25¢
 Moore's.....70¢
 Sardinia Sissors.....gr \$2.75 30¢
 Sprague, No. 1, 55¢; 2, 60¢; 3, 65¢;
 Star.....gr \$2.75
 Streeter's
 Sensible, Japanned, per doz.....60¢
 Sensible, Nickel, per doz.....75¢
 Surprise, per doz.....25¢
 New Sprague, Metallic H'dle, per doz.....50¢
 New Sprague, Wood H'dle, per doz.....60¢
 Universal.....gr \$3.00 55¢
 World's Best.....gr gross, No. 1, \$12.00;
 No. 2, \$24.00; No. 3, \$36.00.....60¢
 Packing, Steam—
 Rubber—
 Standard, fair quality.....70¢
 Interior quality.....75¢
 Extra.....85¢
 Junking Standard.....80¢
 N. Y. B. & P. Co., Double Diamond.....60¢
 N. Y. B. & P. Co., Salamander.....45¢
 N. Y. B. & P. Co., Carbon.....70¢
 Miscellaneous—
 American Packing.....gr \$1.00 10¢
 Cotton Packing.....14¢
 Italian Packing.....12¢
 Jute.....6¢
 Russia Packing.....18¢

Pails—

Creamery—
 S. S. & Co. 12-qt., \$7.00; 20-qt., \$7.25
 gr doz.....5¢

Galvanized Pails—

Light.....Heavy
 10 Quart.....\$2.00 \$2.25 \$2.35 \$2.50
 12 Quart.....2.25 2.50 2.50 2.75
 14 Quart.....2.50 2.75 2.75 3.00

Galvanized Buckets—

Fire.....Well
 10 Quart.....\$2.50 \$2.75 \$2.50 \$2.50
 12 Quart.....2.75 3.00 2.50 2.50
 14 Quart.....3.00 3.25 2.50 2.75

Indurated Fiber Ware

Fire Pails, round bottom.....\$4.50
 Milk, 14 qt.....\$5.40
 Stable, 14 qt.....\$5.40
 Star Pails, 12 qt.....\$4.20

Standard Fiber Ware—

Baggy Pails.....\$3.00
 Chaggy Pails, 14 qt.....6.00 \$7.00
 Dairy Pails, 14 qt., gr doz.....3.75 4.25
 Fire Pails, No. 1, 12 qt., gr doz.....3.75 4.25
 Fire Pails, No. 2, 14 qt., gr doz.....4.00 4.50
 Horse Pails.....4.00
 Slop Jars (bal. trap).....7.50 8.50
 Water Pails, 12 qt., gr doz.....8.15 8.75

Pans—Dripping—

Large sizes.....gr 5¢
 Small sizes.....gr 5¢
 Silver & Co. (Covered).....40¢

Fry—

Standard List:
 No.....1 2 3 4
 gr doz.....\$3.00 \$3.75 \$4.25 4.75 \$5.25
 No.....\$6.00 \$7.00 \$8.00 \$9.00
 Polished, regular goods.....75¢
 Acme Fry Pans.....60¢

Dust—

Steel Edge, No. 1.....gr doz \$1.75

Roasting and Baking—

Columbian, S. S. & Co.: Nos. 10, \$2; 20,
 \$2.25; 30, \$2.50 each.....60¢

Paper and Cloth—

Sand and Emery—
 List April 19, 1888.....50¢
 Sibley's Emery and Crocus Cloth.....30¢

Parers—

Advance.....gr doz \$4.25
 Baldwin.....gr doz 4.75
 Bonanza.....gr doz 5.00
 Dandy.....gr doz 7.50
 Elopee.....gr doz 4.00
 Eureka, 1888.....gr doz 12.00
 Family Bay State.....gr doz 6.00
 Favorite.....gr doz 5.00
 Gold Medal.....gr doz 4.00
 Ideal.....gr doz 4.00
 Improved Bay State.....gr doz 27.00 \$30.00
 Little Star.....gr doz 4.00
 Monarch.....gr doz 13.50
 New Lightning.....gr doz 5.50
 Oricle.....gr doz 4.00
 Perfection.....gr doz 4.00
 Reading 72.....gr doz 3.75
 Reading 78.....gr doz 6.75
 Rooking Table.....gr doz 5.50
 Turn Table.....gr doz 4.50
 Victor.....gr doz 13.50
 Waverly.....gr doz 4.00
 White Mountain.....gr doz 4.00

Potato—

Antrim Combination.....gr doz \$5.50
 Saratoga.....gr doz \$5.50
 White Mountain.....gr doz \$4.50

Pencils, Soapstone—

See Crayons.

Pickers, Fruit—

Prize Fruit Pickers.....50¢
 Railroad or Adse Eye, 5 to 6, \$12.00; 6
 to 7, \$18.00.....60¢

Picture Nails—

See Nails, Picture.

Pinking Irons—

See Irons, Pinking.

Pins—

Humason, Beckley & Co.'s.....70¢
 Peck, Stow & W Co.....60¢
 Sargent & Co.'s, \$17 and \$18.....60¢

Escutcheon—

Brass.....70¢
 Iron, list Nov. 11, 1885.....75¢

Pipe, Wrought Iron—

List April 13, 1893.
 14 and under, Plain.....67¢
 14 and under Galv.....60¢
 14 and over, Plain.....67¢
 14 and over Galv.....67¢
 Boiler Tubes, list Oct. 24, 1892.....65¢
 Casing, list Nov. 16, 1892.....62¢
 Cold Drawn Seamless Steel Tubing.....50¢
 Inserted Joints Casing, list Nov. 16,
 1892.....57¢
 Steel Boiler Tubes.....57¢

Planes and Plane Irons—

Wood Planes—
 Molding.....60¢
 Bench, First quality.....55¢
 Bench, Second quality.....60¢
 Bailey's (Stanley R. & L. Co.).....50¢

Iron Planes—

Bailey's (Stanley R. & L. Co.).....50¢
 Birmingham.....60¢
 Chepman's Iron Planes.....50¢
 Davis' Iron Planes.....50¢
 Gage Tool Co.'s Self-Setting.....35¢
 Miscellaneous Planes (Stanley R. & L.
 Co.).....25¢
 Sargent's.....60¢
 Standard.....60¢
 Steers' Iron Planes.....60¢
 Buckhorn Thistle.....30¢
 Burt Bros.....8¢
 Butcher's.....\$5.00 \$5.50
 Sandusky.....30¢
 Stanley R. & L. Co.....50¢
 L. & J. White.....25¢

Plates—

Felco.....gr 6¢

Pliers and Nippers—

Button Patent.....60¢
 Carey's Pat. Wire Cutters.....20¢
 Cronk's 8 in., \$15.00; 10 in.....22¢
 Cronk's Button Pattern.....60¢
 Cronk's Carrier Pliers.....40¢
 Eureka Pliers and Nippers.....40¢
 Gas Pliers.....60¢
 Gas Pliers, Gustav's Nickel Plated.....60¢
 Hall's Nippers, No. 2, 5 in., \$13.50; No.
 4, 7 in., \$21.00 dos.....40¢
 Hall's Pliers.....65¢
 Humason & Beckley Mfg. Co. 50¢
 Lindsay's Giant, No. 55, 5 in., gr doz,
 \$10.50.....35¢
 Morrill's Parallel, gr doz, \$12.00.....30¢
 P. S. & W. Cast Steel.....50¢
 P. S. & W. Timmers' Cutting Nippers,
 add 8¢.....10¢
 Russell's Parallel.....25¢
 Stanley's Duplex, 5 in., gr doz, \$7.50, 33¢
 Waterbury Nip's, 5 in., gr doz, \$7.50, 33¢

Plumbs and Levels—

Regular list.....75¢
 Cook's.....40¢
 Davis Incliniometers.....10¢
 Davis Iron Levels.....30¢
 Diston's.....50¢
 Pocket Levels.....70¢
 Stanley's Duplex.....70¢
 Stanley's Handy.....20¢

Poachers, Egg—

Buffalo Steam Egg Poachers, gr doz.
 No. 1, \$6.00; No. 2, \$9.00.....33¢
 Silver & Co., 6-Ring, gr doz, \$4.00; 3-
 Ring.....2.00

Pokes Animal—

Bishop's American.....gr doz \$3.00
 Bishop's I. X. L.....gr doz \$5.00
 Bishop's Steel Monarch.....gr doz \$5.00
 Bishop's Ohio.....gr doz \$5.00
 Bishop's Pioneer.....gr doz \$3.75
 Bolding.....gr doz \$5.00
 Buckeye Single Stale.....gr doz \$2.50
 Columbian, Double Stale.....gr doz \$5.00
 Eagle, Double Stale.....gr doz \$5.00
 Eagle, Single Stale.....gr doz \$3.25
 Metallo Horse Pokes.....gr doz \$5.00

Police Goods—

Daley's Improved Handcuffs, 2 Hands,
 Polished, gr doz, \$48.00; Nickle
 \$57.00; 3 hands, Polished, gr doz
 \$72.00; Nickle, \$84.00.....25¢
 J. P. Lovell's Police Goods.....25¢
 Newhall Ship Chandlery Co. Hand-
 cuffs, \$15.00 gr doz.....25¢
 Tower.....25¢

Polish—

Gaston's Silver Compound.....33¢
 Prestoline.....30¢
 Prestoline Paste.....33¢
 Tante Mills
 Paste, 4 lb tins.....gr, \$14.40
 Paste, 1 lb tins.....gr, \$3.60
 Liquid, 4 lb tins.....gr, \$38.00
 Powder, 1 lb.....gr, \$38.00
 Wynn's White Silk, 4 lb tins, gr doz, \$1.57

Stove—

Black Eagle Benzine Paste, 5 and 10 lb
 cans.....12¢
 Black Flag, Bottles.....gr \$7.20, 10¢
 Black Flag, 5 lb and 10 lb pails.....gr \$8
 Black Jack Water Paste, and 10 lb
 cans.....12¢
 Bonnell's Liquid Stove Polish, gr gro \$9.00
 Bonnell's Paste Stove Polish, gr gro \$8.00
 Boynton's Noon Day.....gr, \$13.00
 Crown Paste.....gr \$7.20
 Crown Paste, 5 lb and 10 lb pails, gr 12
 Diamond O. K. Enamel.....gr \$19.00
 Diamond Rock Nickel Cleaner.....gr \$10.30
 Joseph Dixon's.....gr, \$6.00, 10¢
 Dixon's Plumbago.....gr \$2.50
 Fireside.....gr \$2.50
 Gold Medal.....gr, \$6.00, 25¢
 Japanese.....gr \$3.50
 Jet Black.....gr \$3.50
 Lustrous.....gr \$4.75
 Nickel Plate Paste.....gr \$8.00
 Parlor Fringe Stove Enamel, gr,
 Raven Liquid, 6 oz. bottles.....gr \$3.00

Potato—

Raven Liquid, 8 oz. bottles.....gr \$9.00
 Raven Paste in 5 lb. pails (cases of
 6 pails), gr 10¢
 Raven Water Polish, large boxes.....gr \$7.20
 Rising Sun.....gr, \$5.00 \$5.75
 Ruby.....gr, \$3.75
 Sun Paste No. 10.....gr, \$7.20
 Sun Paste No. 5.....gr, \$4.50
 Wynn's Black Silk, 5 lb pail.....gr, 15¢
 Wynn's Black Silk, 4 lb box, gr, \$12.00
 Wynn's Black Silk, 3 lb box, gr, 8¢
 Wynn's Black Silk, 2 lb box, gr, \$12.00
 Yates' Liquid, 2 3 5 10 gal
 gal.....\$0.70 \$0.50 \$0.40
 Yates Standard Paste Polish, 10 lb cans,
 gr 12¢; 5 lb cans, gr 10¢

Poppers Corn—

Round or Square,<

Snaps, Harness, &c.
Anchor 1. & S. Mfg. Co. 50¢
Andrews 50¢
Cover's Saddlery Works' Triumph 50¢
Covered Spring 50¢
Cover 50¢
Cover, New Patent 50¢
Cover, New R. E. 50¢
Fitch's (Bristol) 50¢
German, new list 50¢
Hotchkiss 50¢
Kelley & Woolworth's Steel Harness 50¢
John Prots Snaps 50¢
Sargent's Patent Guarded 50¢
Scythe 50¢

Spaths 50¢

Soldering Irons 50¢

Spittoons, Cuspidors, &c.
Standard Fiberglass 50¢
Cuspidors, 3/4-inch, No. 5, 8, 10, 11 inch, 50¢

Spittoons, Daisies, 8-inch, No. 1, 4 10 and 11 inch, 50¢

Spoke Shaves 50¢

Spoke Trimmers 50¢

Spoons and Forks 50¢

Tinned Iron 50¢

Beating, Cen. Stamp, Co.'s list 70¢
Buffalo, S. S. & Co 50¢
Solid Table and Tea, Cen. Stamp 70¢

Silver Plated 50¢

4 months or 5¢ cash 80 days:

L. Boardman & Son 50¢
Holmes & Edwards Silver Co. 50¢
Heriden Brit. Co., Rogers 50¢
Reed & Barton 50¢
Rogers & Bros 50¢
C. Rogers & Bros 50¢
Rogers & Hamilton 50¢
Wm. Rogers Mfg. Co. 50¢
Simpson, Hall, Miller & Co. 50¢

Miscellaneous 50¢

Boardman's Britannia Spoons, case lots 50¢
Boardman's Nickel Silver, list July 1, 1891 50¢
Britannia 50¢
German Silver 50¢
Nickel Silver 50¢
Holmes & Edwards Silver Co. 50¢
No. 24 German Silver 50¢
No. 30 Silver Metal 50¢
No. 49 Nickel Silver 50¢
No. 50 Nickel Silver 50¢
No. 67 Mexican Silver 50¢
Rogers & Hamilton 50¢
Cimetar, Flatware 50¢
Cimetar, Steel Goods 50¢
Crown Hamilton, Flatware and Cutlery 50¢
Steel Goods 50¢
Wm. Rogers Mfg. Co. 50¢
185 Rogers German Silver 50¢
225 Rogers Nickel Silver 50¢
Rogers Silver Metal 50¢

Spring Doc 50¢

Champion (D) 50¢
Cowell's, No. 1, 2 50¢
Gem (Coll), list April 19, 1886 50¢
Hercules 50¢
Phenix 50¢
Rubber, complete, No. 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Carriage, Wagon, &c. 50¢

Multiple, Concord, Platform and Hair 50¢

Roller 50¢

Oil's Bolster Springs 50¢

Sprinklers, Lawn 50¢

Squares 50¢

Steel and Iron 50¢

Try Square and T Bevels 50¢

Avery's Bevel Protractor 50¢

Avery's Flush Bevel Squares 50¢

Diston's Try Square and T Bevels 50¢

Starrett's Micrometer Caliper Squares 50¢

Winterbottom's Try and Miter 50¢

Squeezers 50¢

Fodder 50¢

Blair's 50¢

Blair's "Olimax" 50¢

Porcelain Lined, No. 1 50¢

Wood, Common 50¢

Wood, No. 2 50¢

Dean's, No. 1 50¢

Dunlap's Improved 50¢

Hotchkiss Straight Flash 50¢

Jennings' Star 50¢

King 50¢

Little Giant 50¢

Sammis 50¢

The Boss 50¢

Standard Fiber Ware 50¢

See Ware, Standard Fiber 50¢

Staples 50¢

Barbed Blind, 1/4 in. and larger 50¢

Barbed Blind, 1/4 in. 50¢

Fence Staples, Galvanized 50¢

Fence Staples, Plain 50¢

Grand Crossing Tack Co.'s list 50¢

Steels Butchers 50¢

O. & A. Hoffmann's 50¢

Nichols Bros. 50¢

Steelyards 50¢

Stocks and Dies 50¢

Blacksmith's 50¢

Butterfield's Goods 50¢

Waterford Goods 50¢

Gardner 50¢

Grease River 50¢

Lightning Screw Plate 50¢

Beece's New Screw Plates 50¢

Reversible Ratchet 50¢

Stone 50¢

Stones, Grind-See Grindstones 50¢

Scythe Stones 50¢

Pike Mfg. Co., list April, 1892 50¢

Island Stone Co., list Nov 1892 50¢

Oil Stones, &c.
Pike Mfg. Co. 50¢
Hindustan No. 1, 2 50¢
Sand Stone 50¢
Turkey Oil Stone 50¢
Turkey Slips 50¢
Lily White Washita 50¢
Roe Red Washita 50¢
Washita Stone, Extra 50¢
Washita Stone, No. 1 50¢
Washita Stone, No. 2 50¢
Lily White Slips 50¢
Roe Red Slips 50¢
Washita Slips, Extra 50¢
Washita Slips, No. 1 50¢
Arkansas Stone, No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 5

Silver Plated, Hollow
4 mo. or 5 1/2 in 50 days.
Meriden Britannia Co. 40¢
Reed & Barton 40¢
Rogers & Brother 40¢
Simpson Hall, Miller & Co. 40¢
Hartford Silver Plate Co. 40¢
William Rogers Mfg. Co. 40¢

Washers
Size hole 5-16 1/4 1/2 5/16 1/4
Washers 5¢ 4 1/2 3 1/2
In lots less than 500, # 2, add 1/4, 5-3
boxes 1/2 to list.

Whips

American Whip Co.: Length.	4 1/4	5	5 1/2	6	6 1/2	7	7 1/2	8 ft.
X. L. Whalebone Drivings	\$18.00	\$20.00	\$22.00	\$24.00	\$27.00	\$30.00	\$35.00	\$40.00
Bureka, Two-thirds Whalebone	15.00	16.00	17.00	18.00	20.00	22.00	25.00	30.00
Bull Bone, Half-length Whalebone	11.00	12.00	13.00	14.00	15.00	16.00	18.00	20.00
American Standard	8.00	8.50	9.00	9.50	10.00	10.50	11.00	12.00
True Grip, Raw Hide Center	6.00	6.00	6.50	7.00	7.50	8.00	8.50	9.00
New Name, Stocked Java, Black and Wine Colors	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Americus, 93 Pen Whip	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Gents' Light Driving No. 111	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Gents' Light Driving No. 106	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Hand-made Stocked Java No. 103	3.75	4.00	4.00	4.00	4.00	4.00	4.00	4.00
A large variety of cheaper grades	50¢	50¢	50¢	50¢	50¢	50¢	50¢	50¢
Team Whips	50¢	50¢	50¢	50¢	50¢	50¢	50¢	50¢
Toy Whips	50¢	50¢	50¢	50¢	50¢	50¢	50¢	50¢
Hardware Assortment, 10/American, 75 Whips for \$50.00								

Wire and Wire Goods—Iron
Br. & Ann. Nos. 0 to 18. 75¢@1.00
Cord'd, Nos. 0 to 18. 75¢@1.00
Galv., Nos. 0 to 18. 75¢@1.00
Tin'd, Nos. 0 to 18. 75¢@1.00
Extra 5¢@10¢ often given and low net prices often made on large lots.

Washer Cutters—
See Cutters. Washers.
Water Coolers—
See Coolers, Water.
Wedges—
Iron, Steel, 2 1/2¢@3¢
Steel, 3¢@4¢

Weights Sash—
Tons, 10 lb. for 1 lb. 15¢, 15 lb. for 1 lb. 15¢
Well Buckets Galvanized—
See Pails, Galvanized.
Wheels Well—
8 in., \$2.00; 10 in., \$2.50; 12 in., \$2.75

Galvanized Fence— 75¢@1.00
Malin's An'ed & Tin'd on Spools. 60¢@65¢
Steel's Brass and Cop. on Spools. 50¢@55¢
Steel Music Wire, 12 to 30, imported. 60¢@70¢
Stubs' Steel Wire. 60¢@70¢
Tate's Spooled, Tin'd & Annealed. 60¢@65¢
Tate's Spooled Cop. and Brass. 50¢
Tinned Broom Wire, 18 to 21, # 2. 40¢@45¢
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list. 80¢@90¢@15¢

Wire Cloth and Netting—

Galvanized Wire Netting. 80¢@85¢@10¢
Painted Screen Cloth 100 ft \$1.45@1.60

Wire Barb—

See Trade Report.

Wire Rope—See Rope, Wire.**Wrenches—**

American Adjustable. 40¢@45¢@10¢
Baxter's Adjustable "B". 40¢@45¢@10¢
Baxter's Diagonal. 60¢@65¢@10¢
Coe's Genuine. 60¢@65¢@10¢
Coe's "Mechanics". 60¢@65¢@10¢
Girard Standard. 65¢@70¢@10¢
Lamson & Sessions' Engineers. 60¢@65¢@10¢
Lamson & Sessions' Standard. 70¢@75¢@10¢
Lamson & Sessions' Agricultural. 75¢@80¢@10¢
S. & W. Agricultural. 80¢@85¢@10¢
W. B. Diamond. 80¢@85¢@10¢
Acme, Bright. 50¢@55¢@10¢

Acme, Nicheled. 40¢@45¢@10¢
Aiken's Pocket (Bright). 25¢@30¢@10¢
Alligator. 60¢@65¢@10¢
Always Ready. 35¢@40¢@10¢

Bemis & Call's:

Adjustable S. 35¢@40¢@10¢
Briggs' Pattern. 30¢@35¢@10¢
Combination Black. 40¢@45¢@10¢
Combination Bright. 45¢@50¢@10¢
Cylinder or Gas Pipe. 45¢@50¢@10¢
Extra Heavy. 45¢@50¢@10¢
Merrick's Pattern. 45¢@50¢@10¢
No. 3 Pipe Bright. 50¢@55¢@10¢
Bit Wrench, Adj., Tatum's. 25¢@30¢@10¢
Boardman's. 30¢@35¢@10¢
Cincinnati Brace Wrenches. 25¢@30¢@10¢
Diamond Steel. 55¢@60¢@10¢
Donohue's Engineer. 30¢@35¢@10¢
Eagle. 50¢@55¢@10¢
Eucles. 70¢@75¢@10¢
Tatta Vise Wrench. 55¢@60¢@10¢
The Favorite Pocket. 40¢@45¢@10¢
Walker's. 55¢@60¢@10¢
Webster's Pat. Combination. 25¢

Wringers, Clothes—

In lots of less than one dozen.
Am. Wringer Co.'s list, July 2, 1894. 25¢ cash
Colby Wringer Co.'s list, May 1, 1894. 25¢ cash
Lovell Mfg. Co.'s list, July 2, 1894. 25¢ cash
Peerless Mfg. Co.'s list, Feb. 1894. 25¢ cash
National Wringer & Mfg. Co.'s list, June 1, 1894. 25¢ cash

Wrought Goods—

Staples, Hooks, &c., list, March 17, 1893. 85¢@25¢@35¢@30¢

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw, per gal.	54	55
Linseed, City, boiled.	57	58
Linseed, Western, raw	53	54
Lard, City, Extra Winter.	55	56
Lard, City, Prime.	53	54
Lard, City, Extra No. 1.	52	53
Lard, City, No. 1.	51	52
Lard, Western, prime.	52	53
Cotton-seed, Crude, prime.	50	51
Cotton-seed, Crude, off grades.	26	28
Cotton-seed, Summer Yellow, prime.	30	32
Cotton-seed, Summer Yellow, off grades.	30	32
Sperm, Crude.	60	62
Sperm, Natural Spring.	65	67
Sperm, Bleached Spring.	65	67
Sperm, Natural Winter.	65	67
Sperm, Bleached Winter.	70	72
Whale, Crude.	40	42
Whale, Natural Winter.	45	47
Whale, Bleached Winter.	45	47
Whale, Extra Bleached.	47	49
Sea Elephant, Bleached	26	28
Water.	25	26
Menhaden, Crude, Sound.	25	26
Menhaden, Crude, Southern	26	27
Menhaden, Light Pressed.	30	31
Menhaden, Bleached Water.	35	36
Menhaden, Extra Bleached.	37	38
Tallow, City, prime.	43	45
Tallow, Western, prime.	40	42
Cocanut, Ceylon.	54¢	56¢
Cod, Domestic.	34	35
Cod, Foreign.	36	37
Red Elaine.	35	36
Red Saponified.	44¢	46¢
Bank.	28	29
Straits.	29	30
Olive, Italian, bbls.	58	59
Neatsfoot, prime.	60	61
Palm, prime, Lagos.	54¢	56¢

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test.	7	7 1/2
Black, 29 gravity, 15 cold test.	7	8
Black, 29 gravity, summer.	5 1/2	6 1/2

Cylinder light, altered.	12	16
Cylinder, dark, altered.	10	13
Paraffine, 23 1/2 @ 24 gravity.	11	12
Paraffine, 25 gravity.	10	11
Paraffine, 28 gravity.	7 1/2	8
Paraffine, red.	9 1/2	10 1/2

Paints and Colors—

Barytes, Foreign, 10 ton.	\$22.00	\$24.00
Barytes, Amer. doated.	\$20.00	\$22.00
Barytes, Amer. No. 1.	16.00	18.00
Barytes, Amer. No. 2.	13.00	15.00
Barytes, Amer. No. 3.	11.00	12.00
Blue, celestia.	6	8
Blue, Chinese.	40	50
Blue, Prussian.	25	40
Blue, Ultramarine.	8	25
Brown, Spanish.	1 1/2	1
Brown, Vandyke, Amer.	3	3 1/2
Brown, Vandyke, English.	6	8
Carmine, No. 40, in bulk.	2.00	2.00
Carmine, No. 40, in boxes or barrels.	2.10	2.10
Carmine, No. 40, in ounce bottles.	3.00	3.00
Chalk, in bulk.	1.75	2.00
Chalk, in bbls. 100 lb.	83	40
China Clay, English.	16	18.00
Cobalt Oxide, prep'd.	9.00	11.00
Cobalt Oxide, black.	1.90	1.90
Cobalt Oxide, black, less 100 lb.	1.90	1.90
Green, Paris, in bulk.	23	23
Green, Paris, 170 @ 175 lb.	23 1/2	23 1/2
Green, Paris, small pack.	25	29 1/2
Rebates.—3¢ # 2 on lots of 10,000 lb or over; 2 1/2¢ on 4000 to 10,000 lb; 2¢ on 2000 to 4000 lb; 1 1/2¢ on 1000 to 2000 lb; 1¢ on 500 to 1000 lb purchased during the season.		
Green, Chrome, ordinary.	6	12
Green, Chrome, pure.	22	25
Lead, Eng., B.B. white.	7	8
Lead, Amn. White.	4 1/2	4 1/2
Dry.	5 1/2	6 1/2
Lead, White, in oil, 25 lb tin pails, add to keg price.	1	1 1/2
Lead, White, in oil, 12 1/2 lb tin pails, add to keg price.	1	1
Lead, White, in oil, 1 to 5 lb assorted tins, add to keg price.	2 1/2	2 1/2

Lead, Red, bbls. and 1/2 bbls.	5 1/4	5 1/4
Lead, Red, kegs.	5 1/4	5 1/4
Litharge, kegs.	5 1/4	5 1/4
Litharge, bbls. and 1/2 bbls.	5 1/4	5 1/4
Ocher, Rochelle.	1.35	1 1/2
Ocher, French Washed.	1 1/4	2 1/2
Ocher, German Washed.	1 1/4	2 1/2
Ocher, American.	1 1/4	2 1/2
Orange Mineral, English.	7 1/2	8
Orange Mineral, French.	10	10 1/2
Orange Mineral, German.	7 1/2	8
Orange Mineral, American.	7 1/2	8
Red, Indian, English.	5	15
Red, Indian, American.	2	5
Red, Turkey.	9	14
Red, Tuscan.	7	10
Red, Venetian, American.	100 lb.	.70
Red, Venetian, English.	1.10	1.35
Sienna, Italian, Burnt and Powder.	4	5
Sienna, Ital., Burnt Lumps.	1 1/2	3 1/2
Sienna, Ital., Raw, Powder.	1 1/2	3 1/2
Sienna, Ital., Raw, Lumps.	1 1/2	3 1/2
Sienna, American, Raw.	1 1/2	3 1/2
Sienna, American, Burnt and Powdered.	1 1/2	3 1/2
Talc, French.	1 1/2	1 1/2
Talc, American.	1 1/2	1 1/2
Terra Alba, French.	65	75
Terra Alba, English.	65	75
Terra Alba, American No. 1.	65	75
Terra Alba, American No. 2.	45	60
Umber, Turkey, Burnt and Powdered.	2 1/2	3 1/2
Umber, Turkey, Raw and Powdered.	2 1/2	3 1/2
Umber, Turkey, R/W Lumps.	2 1/2	3 1/2
Umber, Turkey, Bnt. Amer.	1 1/2	2 1/2
Umber, Turkey, R/W Amer.	1 1/2	2 1/2
Yellow, Chrome.	10	25
Vermilion, American Lead.	11	12
Vermilion, Quicks'g, bulk.	43	43
Vermilion, Quicks'g, bags.	44	44
Vermilion, Quicksilver sm'r pkgs.	52	52
Vermilion, English Import.	55	60
Vermilion, Imitation, Eng.	8	30
Vermilion, Trieste.	90	95
Vermilion, Chinese.	85	100
Whiting Common, 100 lb.	40	45
Whiting Gliders.	50	55
Zinc, American, dry.	3 1/2	4 1/2
Zinc, French, Red Seal.	7	7 1/2

Zinc, French, Green Seal.	5 1/4	9
Zinc, French, V. M. X.	6	7
Zinc, Antwerp, Red Seal.	6	6 1/2
Zinc, Antwerp, Green Seal.	6 1/2	7 1/2
Zinc, German, L. Z. O.	5	5
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over.	10 1/2	11
Zinc, V. M. in Poppy Oil, Red Seal, lots of 1 ton and over.	10 1/2	11
Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1/4; 25 bbls. 2/4; 50 bbls. 4/4. No discount allowed on less than bbl. lots.		

Colors in Oil—

Black, Drop, Frankfort.	25	30
Black, Drop, English.	12	15
Black, Drop, Domestic.	7	10
Black, Lampblack, Best.	20	25
Black, Lampblack, Common.	7	13
Black, Ivory.	35	40
Blue, Chinese.	20	25
Blue, Prussian.	20	25
Blue, Ultramarine.	12	18
Brown, Vandyke.	7	12
Green, Chrome.	8	13
Green, Paris.	16	18 1/2
Sienna, Raw.	7	14
Sienna, Burnt.	7	14
Umber, Raw.	7	10
Umber, Burnt.	7	10

Putty—

In barrels and 1/2 bbls.	.01 1/2	.01 1/2
In tubs.	.01 1/2	.01 1/2
In tin cans.	.01 1/2	.01 1/2
In bladders.	.01 1/2	.01 1/2

Spirits Turpentine—

In regular bbls.	30 1/2	31
In machine bbls.	31	31

Glue—

Low Grade.	7	9
Cabinet.	11	14
Medium White.	12	14
Extra White.	13	16
French.	10	20
English.	10	15
Irish.	10	12 1/2

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